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Determination of Activated Sludge Biokinetic Constants for Chemical and Plastic Industrial Wastewaters
Appendix A-Raw Data

Oklahoma State Univ., Stillwater

Prepared for

Robert S. Kerr Environmental Research Lab.
Ada, OK

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DETERMINATION OF ACTIVATED SLUDGE BIOKINETIC CONSTANTS FOR CHEMICAL AND PLASTIC INDUSTRIAL WASTEWATERS
(APPENDIX A-RAW DATA)

by

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CR 806843-01-02

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The most widely used method of wastewater treatment is biological treatment. The The use of kinetic models to describe the behavior of a biological wastewater treatment process has become widely accepted practice. The most often used kinetic models include those developed by Eckenfeler, McKinney, Lawrence and McCarty, and Gaudy. All of these models contain kinetic constants, and the usefulness of each model is a function of the reliability of the kinetic constants. However, there has not been enough information available to establish reliable values for these kinetic constants for industrial wastewaters.

This project has determined the biokinetic constants and fate for 24 toxic organic pollutants when present in a highly biodegradable wastewater. The normal approach for determining biokinetic constants has been to plot the average values. This approach masks the actual scatter of the data. This study has produced a methodology for analysis of the test results from biological activated sludge systems for determining the biological variability inherent in these types of systems.

This study also investigated the possibility of predicting the fate and effluent concentrations of the various priority pollutants. It was found that good predictions for the priority pollutants can be made.

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FOREWORD

The Environmental Protection Agency is charged by Congress to protect the Nation's land, air and water systems. Under a mandate of national environmental laws focused on air and water quality, solid waste management and the control of toxic substances, pesticides, noise, and radiation, the Agency strives to formulate and implement actions which lead to a compatible balance between human activities and the ability of natural systems to support and nurture life. In partial response to these mandates, the Robert S. Kerr Environmental Research Laboratory, Ada, Oklahoma, is charged with the mission to manage research programs to investigate the nature, transport, fate, and management of pollutants in ground water and to develop and demonstrate technologies for treating wastewaters with soils and other natural systems for controlling pollution from irrigated crop and animal production agricultural activities; for developing and demonstrating cost-effective land treatment systems for the environmentally safe disposal of solid and hazardous wastes.

EPA, as provided for in the Clean Water Act, has the responsibility to promulgate regulations to protect streams and publicly owned treatment works. An important consideration is the economic impact that these regulations may have. This report summarizes a study of the biokinetic constants and fate for 24 toxic organic pollutants. This information will aid the Agency in its effort to compute the economic impact that a given level of effluent guidelines may have on a specified industry.

Clinton W. Hall
Clinton W. Hall
Director
Robert S. Kerr Environmental Research Laboratory

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ABSTRACT

The most widely used method of wastewater treatment is biological treatment. Ths use of kinetic models to describe the behavior of a biological wastewater treatment process has become widely accepted practice. The most often used kinetic models include those developed by Eckenfelder, McKinney, Lawrence and McCarty, and Gaudy. Eckenfelder (first model) and McKinney use first order kinetics for substrate removal; Lawrence and McCarty, and Gaudy use the empirical Monod kinetics for substrate removal; and Eckenfelder (second order) relates the substrate removal rate as a function of the remaining substrate concentration to the initial concentration. All of these models contain kinetic constants and the usefulness of each model is a function of the reliability of the kinetic constants. However, there has not been enough information available to establish reliable values for these kinetic constants for industrial wastewaters.

Cooperative Agreement CR 806843-01-02 has determined the biokinetic constants and fate for twenty-four toxic organic pollutants when present in a highly biodegradable wastewater. Biokinetic constants were also determined based upon biochemical oxygen demand (BOD_5), total organic carbon (TOC), chemical oxygen demand (COD), and specific organic chemical. The normal approach for determining biokinetic constants has been to plot the average values. This approach masks the actual scatter of the data and provides an average value or 50 percent probable value for the biokinetic constants to be used in design. This study has produced a methodology for analysis of the test results from biological activated sludge systems for determining the biological variability inherent in these types of systems.

This study also investigated the possibility of predicting the fate and effluent concentrations of the various priority pollutants. It was found that good predictions for the priority pollutants can be made. In general, it can be predicted that nitrogen compounds, phenols, oxygenated compounds, polynuclear aromatics, and phthalates will be removed by biological degradation. Aromatics will be removed by both biological degradation and stripping, except when the Henry's Law Constant is in the 10^{-5} atm·m^3/mole range, then that chemical will be removed by biological degradation only. Halogenated hydrocarbons present a special problem. Some are removed by stripping, whereas, others are removed by combined biodegradation and stripping. No parameter, such as Henry's Law Constant or partition coefficient was found that would predict which removal mechanisms would persist. Therefore, biodegradability studies must be conducted.

Appendix A was submitted as a supplement to the full report in order to provide the raw data for the numerous experiments conducted.

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SECTION I

INTRODUCTION

Provisions in the Clean Water Act clearly require the U.S. Environmental Protection Agency to promulgate regulations to protect streams and publicly owned treatment works and to see to it that regulatory practices are in place to protect the vast investment of public funds. This law can affect nearly all industrial manufacturing plants now discharging or planning to discharge into POTW's or a stream. An important category for which effluent guidelines are needed is waste components from chemical and plastic industries. For this category, the problem is extremely difficult because of the thousands of different chemicals produced at plants across the nation. The product lines of these plants, and thus the nature of the wastes, are not fixed and change with market needs. This industrial activity consequently produces wastewaters of great and changing variety in the types of pollutants they contain. Furthermore, a significant number of the growing list of priority pollutants are appearing in various waste streams from the manufacturing of chemicals and plastics.

Because of the immensity and tremendous variety of products and process routes from production, it is logical that a computer programming procedure would be developed to handle the definition of wastewater composition as well as alternate processing routes for the treatment of wastewater. Computer programs have been developed that can combine waste load information on each product, select various product treatability routes, combine them, design and cost-out a plant's treatment system, and, finally, allocate the estimated treatment costs to the contributing product process route. However, before plant costs can be modeled, the treatment design models must be established. Design models are available but the biokinetic parameters for the chemical and plastic industries are not available. Therefore, the determination of the biokinetic parameters becomes of vital concern to the success of the cost model.

The current best-practical technology (BPT) for treatment of chemical, industrial and plastic manufacturing wastes usually involves activated sludge, since biological treatment is often found to be the most cost effective in dealing with relatively low concentrations of the types of organic materials in such wastes.

Modern approaches for the design of activated sludge employ mathematical process models depicting the relationships among factors affecting the kinetics of wastewater purification. All design models require quantitative assessment of numerical values for biokinetic constants for the activated sludge in question. These values are in general a function of the type of carbon source comprising the carbonaceous biochemical oxygen demand. Various models are available for use in designing activated sludge processes.

The primary objective of this study was to determine the biokinetic constants needed in process modeling for predicting effluent quality and design configurations of activated sludge processes treating the waste streams from chemical and plastic manufacturing. Secondary objective was to refine the method of combining the biokinetic constants of components in a mix in order to determine the overall biokinetic constants of the mix and to establish the fate of the priority pollutants in the wastewater.

The data collected during this study were so numerous it was impossible to include it as a part of the main report. Therefore, the appendix has been prepared to provide the raw data collected during the two year study.

TABLE A-1. BOD_5 DATA FOR 2 DAY CONTROL UNIT

Chemical Compound: Control

θ_c = 2 days

Parameter: BOD_5

Volume of Reactor = 2.85 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
6/30/80	312	2.7	550	24	1.42	5.9	1.69	1.76
7/2	366	3.5	690	6	1.12	5.9	1.58	2.44
7/4	249	2.6	1010	2	1.37	6.0	0.75	2.07
7/9	442	3.6	1410	4	1.42	6.2	0.98	1.98
7/11	426	6.52	970	16	1.4	5.9	1.31	1.93
7/14	285	5.5	1040	8	1.34	5.9	0.82	2.07
7/16	247	2.8	920	100	1.34	5.9	0.80	1.55
7/18	279	4.5	840	0.1	0.54	5.9	0.99	5.27
7/21	357	1.6	990	8	1.42	5.9	1.07	1.96
7/23	385	4.6	660	72	1.38	5.9	1.74	1.52
7/25	320	3.9	760	34	0.53	5.9	1.26	3.70
7/28	243	1.4	410	220	0	5.9	1.77	0.90
7/30	257	2.8	1910	196	0	5.9	0.40	4.71
8/1	313	3.2	720	226	0	5.9	1.30	1.54
8/4	235	0.45	360	224	0	5.9	1.95	0.78
8/6	358	5.5	630	10	0	5.9	1.69	--
8/8	357	6.3	1140	0.1	1.26	5.9	0.93	2.26
8/11	282	1.3	1270	10	1.42	5.9	0.66	1.96
8/13	445	3.5	800	78	1.37	5.9	1.66	1.57
8/15	333	7.3	650	0.1	1.17	5.9	1.53	2.43
8/18	276	3.1	820	6	1.42	5.9	1.00	1.96
8/20	233	2.8	490	109	1.42	5.9	1.42	1.18
8/22	275	1.3	440	100	1.0	5.9	1.86	1.35
8/25	252	2.65	530	92	0	5.9	1.42	2.78
8/27	190	2.3	370	138	0	5.9	1.53	1.30
8/29	283	2.9	430	106	0	5.9	1.96	1.96
N	26	26	26	26	26	26	26	25
$\bar{x}$	307.7	3.41	800.3	73.7	0.86	5.92	1.31	2.12
σ	66.4	1.69	353.0	81.4	0.62	0.06	0.43	1.04
C.V.%	21.6	49.5	44.1	110.4	71.7	1.03	32.5	48.9

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TABLE A-1 (continued)

Chemical Compound: Control

Parameter: BOD_5

θ_c = 2 days

Volume of Reactor = 2.85 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw mg/l	F 1/day	F/M ml/min	θ_c days
9/29/80	312	5.4	790	22	1.42	5.9	1.18	1.76
10/1	258	7.3	500	74	0.51	5.9	1.54	1.68
10/3	154	11.8	630	66	0.10	5.9	0.73	2.91
10/6	288	9.8	600	74	0.0	5.9	1.43	2.72
10/13	312	5.4	820	20	1.31	5.9	1.13	1.92
10/15	331	11.1	700	0	1.26	5.9	1.41	2.26
10/17	323	5.2	800	32	1.12	5.9	1.20	2.01
10/20	313	5.9	760	4	1.39	5.9	1.22	1.20
10/22	296	1.0	800	0	1.43	5.9	1.10	2.00
10/24	239	2.2	810	70	0.75	5.9	0.88	2.00
10/27	266	8.6	680	0	1.37	5.9	1.17	2.08
10/29	313	5.8	820	28	1.26	5.9	1.14	1.89
10/31	315	6.1	740	28	1.17	5.9	1.27	1.97
11/3	325	6.2	530	12	1.1	5.9	1.83	2.25
11/5	292	5.8	560	22	1.19	5.9	1.55	1.92
11/7	313	6.6	520	32	0.87	5.9	1.79	2.13
11/12	247	2.5	360	18	1.14	5.9	2.05	1.89
11/14	273	1.8	600	28	1.09	5.9	1.36	1.99
11/17	286	3.1	470	94	0.0	5.9	1.81	1.68
11/19	275	6.4	600	150	0.0	5.9	1.37	1.34
11/21	294	3.4	530	16	1.13	5.9	1.65	2.11
11/24	205	1.1	730	16	1.13	5.9	0.84	2.21
11/26	265	4.3	730	44	1.0	5.9	1.08	1.96
11/28	302	3.9	740	32	1.30	5.9	1.22	1.77
N	24	24	24	24	24	24	24	24
$\bar{x}$	283.2	5.45	659.2	36.77	5.9	5.9	1.33	1.99
σ	41.28	2.90	130.4	35.41	0	0	0.33	0.36
C.V.%	14.58	53.2	19.7	96.30	0	0	24.82	18.13

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TABLE A-2. BOD$_5$ DATA FOR 3 DAY CONTROL UNIT

Chemical Compound: Control θ_c = 3 days

Parameter: BOD$_5$ Volume of Reactor = 2.85 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/2/81	184	4.3	537	9	0.95	6.0	1.04	2.64
1/12	292	5.6	273	2	0.95	6.0	3.24	2.83
1/14	245	6.6	352	4	0.95	6.0	2.11	2.75
1/16	223	4.4	334	0	0.95	6.0	2.02	3.00
1/5	184	3.6	536	9	0.95	6.0	1.04	2.64
1/7	205	3.4	792	3	0.95	6.0	0.78	2.91
1/9	308	5.6	704	7	0.95	6.0	1.33	2.78
1/19	229	2.6	1012	10	0.95	6.0	0.69	2.78
1/21	165	2.9	1126	88	0.31	6.0	0.44	2.97
1/26	245	3.6	642	0	0.95	6.0	1.16	3.00
1/28	345	2.7	968	35	0.95	6.0	1.08	2.32
1/30	185	4.2	818	30	0.95	6.0	0.69	2.31
2/2	289	4.3	660	12	0.8	6.0	1.33	3.02
2/4	226	7.0	810	0	0.95	6.0	0.84	3.00
2/6	189	2.1	889	18	0.79	6.0	0.64	3.00
2/9	239	6.3	1250	0	0.95	6.0	0.58	3.00
2/11	214	5.3	836	19	0.95	6.0	0.78	2.53
2/13	250	4.5	1338	25	0.95	6.0	0.57	2.61
2/16	215	7.2	1056	165	0	6.0	0.62	2.11
2/18	237	0.8	660	86	0	6.0	1.09	2.53
2/25	135	1.6	616	30	0.95	6.0	0.64	2.15
2/27	165	3.7	757	32	0.95	6.0	0.66	2.24
N	22	22	22	22	22	22	22	22
$\bar{x}$	225.8	4.2	771.18	26.56	0.82	6.0	1.06	2.69
σ	49.62	1.7	276.52	38.74	0.29	0	0.64	0.30
C.V.%	21.98	40.5	35.86	145.8	35.9	0	60.3	11.05

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TABLE A-3. BOD_5 DATA FOR 4 DAY CONTROL UNIT

Chemical Compound: Control

θ_c = 4 days

Parameter: BOD_5

Volume of Reactor = 2.85 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
3/15/80	255	2	1300	1	0.70	5.7	0.56	4.04
3/17	270	5	1320	2	0.70	5.8	0.60	4.01
3/19	280	4	1365	8	0.69	6.1	0.63	3.86
3/21	250	2	1300	2	0.70	5.9	0.58	4.00
3/24	242	4	1315	5	0.70	5.8	0.53	3.91
3/26	255	2	1440	39	0.50	5.9	0.53	3.98
3/29	287	1.3	1220	11	0.69	5.8	0.69	3.75
3/31	262	1.4	1275	36	0.5	5.8	0.60	3.95
4/2	265	1.5	1205	20	0.65	5.8	0.65	3.66
4/4	257	2	1305	10	0.69	5.8	0.58	3.81
4/6	265	3	1330	7	0.69	5.9	0.59	3.90
4/8	255	0	1360	5	0.70	5.9	0.56	3.91
4/11	284	2.1	1167	26	0.65	5.8	0.72	3.47
4/13	294	0.5	1247	10	0.65	5.9	0.70	4.00
4/15	280	1.2	1590	9	0.70	5.9	0.52	3.83
4/17	308	1	1092	21	0.65	5.9	0.84	3.56
4/19	287	2.3	1645	15	0.69	5.9	0.52	3.74
4/21	256	1.1	1505	50	0.46	5.8	0.50	3.95
4/23	262	4	1960	4	0.70	5.9	0.40	3.98
4/26	280	2	1655	3	0.70	5.9	0.60	3.99
4/28	273	1.0	1375	10	0.70	5.9	0.59	3.77
4/30	260	2.5	1360	17	0.65	5.8	0.56	3.82
5/3	295	0.6	1517	1	0.70	5.9	0.58	4.04
5/5	272	1.0	1200	5	0.70	5.9	0.68	3.89
5/7	263	1.2	1275	6	0.7	5.9	0.62	3.87
5/10	266	1.8	1105	4	0.70	5.8	0.71	3.92
5/12	272	0.7	1185	12	0.65	5.8	0.68	3.91
5/14	266	0.9	1165	4	0.70	5.9	0.68	3.92
5/17	277	0.8	1255	22	0.65	5.8	0.65	3.63
5/19	262	1.0	1400	30	0.60	5.8	0.55	3.72
5/21	281	0.9	1247	28	0.60	5.9	0.68	3.67
5/23	286	0.9	1245	23	0.60	5.9	0.69	3.82
N	32	32	32	32	32	32	32	32
$\bar{x}$	270.8	1.74	1341.4	13.9	0.66	5.86	0.61	3.85
σ	14.5	1.15	177.3	12.2	0.06	0.07	0.08	0.14
C.V.%	5.4	65.9	13.2	87.4	9.6	1.2	13.6	3.65

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TABLE A-3 (continued)

Chemical Compound: Control

θ_c = 4 days

Parameter: BOD_5

Volume of Reactor = 2.85 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
6/30/80	312	4.0	1000	6	0.71	5.9	0.93	3.85
7/2	366	4.0	940	12	0.70	5.9	1.16	3.69
7/4	249	1.8	980	52	0.62	5.8	0.74	3.18
7/7	406	2.1	1670	4	0.64	5.9	0.72	4.37
7/9	442	7.1	2750	4	0.69	5.9	0.48	4.09
7/11	426	6.1	2080	16	0.7	5.9	0.61	3.85
7/14	285	2.9	1530	4	0.69	5.9	0.56	4.05
7/16	247	1.85	1030	2	0.69	5.9	0.71	4.07
7/18	279	2.7	820	2	0.69	5.9	1.01	4.06
7/21	357	17.4	660	8	0.71	5.9	1.61	3.69
7/23	385	3.4	860	0	0.63	5.9	1.33	4.52
7/25	320	6.8	960	4	0.64	5.9	0.99	4.31
7/28	243	1.1	670	4	0	5.9	1.08	--
7/30	257	6.2	1110	114	0	5.9	0.69	4.70
8/1	313	1.9	700	462	0	5.9	1.33	0.73
8/4	235	1.6	500	416	0	5.9	1.40	0.59
8/6	358	1.5	1370	38	0	5.9	0.78	--
8/8	357	9.2	1170	0	0.40	5.9	0.91	7.12
8/11	282	4.7	1140	10	0.71	5.9	0.74	3.77
8/13	445	12.1	1180	18	0.65	5.9	1.12	3.90
8/15	333	12.0	1030	0	0.59	5.9	0.96	4.83
8/18	276	3.6	890	4	0.71	6.0	0.92	3.89
8/20	233	2.9	700	42	0.71	6.0	1.01	2.77
8/22	275	2.8	780	68	0.65	6.0	1.07	2.55
8/25	252	5.0	810	172	0	5.9	0.93	2.27
8/27	190	4.4	750	102	0	5.9	0.76	3.55
8/29	283	1.2	860	36	0	5.9	0.98	--
N	27	27	27	27	27	27	27	24
$\bar{x}$	311.3	4.83	1071.9	59.3	0.46	5.9	0.95	3.68
σ	67.7	3.84	468.5	114.9	0.31	0.03	0.26	1.27
C.V.%	21.8	79.4	43.7	193.8	66.7	0.51	27.5	34.7

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TABLE A-3 (continued)

Chemical Compound: Control θ_c = 4 days

Parameter: BOD_5 Volume of Reactor = 2.85 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
9/29/80	312	4.9	940	6	0.71	5.9	0.99	3.75
10/1	258	15.0	790	16	0.6	5.9	0.98	3.75
10/3	154	7.6	420	112	0.56	5.9	1.09	1.06
10/10	315	7.7	700	20	0.47	5.9	1.34	4.08
10/13	312	6.8	920	20	0.49	5.9	1.01	4.29
10/15	331	12.5	480	8	0.56	5.9	2.06	4.12
10/17	323	4.4	920	80	0	5.9	1.05	3.86
10/20	313	7.5	1200	30	0.52	5.9	0.78	3.96
10/22	296	6.4	900	40	0.32	5.9	0.98	4.17
10/27	266	6.2	590	44	0.11	5.9	1.34	3.89
10/29	313	6.6	1090	16	0.52	5.9	0.86	4.47
10/31	315	7.2	1220	0	0.59	5.9	0.77	4.83
11/3	325	9.4	1360	16	0.56	5.9	0.71	4.36
11/5	292	8.4	890	25	0.4	5.9	0.98	4.54
11/7	313	8.7	680	6	0.61	5.9	1.37	4.19
11/10	346	3.8	800	2	0.69	5.9	1.29	4.02
11/12	247	3.4	680	12	0.66	5.9	1.08	3.57
11/14	273	1.8	750	16	0.54	5.9	1.09	4.02
11/17	286	5.8	750	28	0.41	5.9	1.14	4.00
11/19	275	4.6	1030	10	0.63	5.9	0.80	4.03
11/21	294	2.7	1470	18	0.70	5.9	0.60	3.58
11/24	204	0.8	1330	10	0.65	5.9	0.46	4.02
11/26	265	4.4	1640	4	0.65	5.9	0.48	4.26
11/28	302	2.8	1320	0	0.69	5.9	0.68	4.13
N	24	24	24	24	24	24	24	23
$\bar{x}$	288.8	6.23	953	22.5	0.53	5.9	0.997	3.72
σ	42.4	3.25	311.3	25.3	0.17	0	0.335	1.87
C.V.%	14.70	52.22	32.7	112	32.1	0	33.6	50.2

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TABLE A-4. BOD_5 DATA FOR 5 DAY CONTROL UNIT

Chemical Compound: Control

Parameter: BOD_5

θ_c = 5 days

Volume of Reactor = 2.85 liters.

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/2/81	184	5.5	810	12.0	0.57	6.0	0.69	4.13
1/12	292	8.7	722	4.0	0.57	6.0	1.23	4.64
1/14	245.4	6.3	836	0.0	0.57	6.0	0.89	5.00
1/16	223	2.7	694	7.0	0.57	6.0	0.97	4.38
1/15	184	3.2	800	12	0.57	6.0	0.70	4.12
1/17	205	4.0	590	3	0.57	6.0	1.05	4.67
1/19	308	8.7	704	3	0.57	6.0	1.33	4.72
1/21	165	2.2	1663	42	0.36	6.0	0.30	5.01
1/23	217	5.4	1584	10	0.57	6.0	0.41	4.59
1/26	245	3.2	1769	25	0.57	6.0	0.42	4.17
2/9	239	4.2	581	0	0.57	6.0	1.23	5.0
2/13	250	1.5	1056	0	0.57	6.0	0.72	5.00
2/16	215	13.0	1778	12	0.51	6.0	0.37	5.05
2/18	237	2.1	1065	53	0.148	6.0	0.67	4.99
2/20	231	1.5	1698	23	0.46	6.0	0.41	4.99
N	15	15	15	15	15	15	15	15
$\bar{x}$	229.37	4.81	1090	13.73	0.52	6.0	0.76	4.7
σ	37.07	3.14	453.16	15.37	0.11	0	0.33	0.34
C.V.%	16.16	65.33	41.6	111.9	21.93	0	43.9	7.23

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TABLE A-5. BOD_5 DATA FOR 8 DAY CONTROL UNIT

Chemical Compound: Control

θ_c = 8 days

Parameter: BOD_5

Volume of Reactor = 2.85 liters

Date	S_i mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
3/15/80	257	2.6	1475	18	0.30	5.9	0.52	7.12
3/17	284	2.7	1870	14	0.32	5.9	0.45	7.48
3/19	285	3.2	1905	19	0.30	6.0	0.45	7.43
3/21	246	2.0	1820	30	0.25	5.9	0.40	7.38
3/24	229	3.0	2245	30	0.28	5.9	0.30	7.31
3/26	261	2.0	2375	59	0.23	5.9	0.33	6.55
3/29	286	2.0	2332	30	0.27	5.9	0.36	7.58
3/31	277	2.0	2435	18	0.3	5.8	0.33	7.93
4/2	255	1.0	2285	19	0.3	5.8	0.33	7.77
4/4	260	4.0	1897	201	0.05	5.8	0.40	3.07
4/6	298	2.0	2237	9	0.31	5.8	0.39	8.32
4/8	263	0.9	1990	76	0.10	5.8	0.39	6.86
4/11	331	9.0	1797	65	0.15	5.8	0.53	6.38
4/13	292	2.1	1775	21	0.30	5.8	0.46	7.21
4/15	280	5.0	1765	76	0.05	5.8	0.46	6.99
4/17	310	2.4	1618	56	0.10	5.9	0.58	7.30
4/19	285	2.4	1430	197	0.04	5.8	0.59	2.40
4/21	260	1.8	1200	221	0.04	5.9	0.65	1.78
4/23	264	3.2	1140	66	0.05	5.8	0.68	5.37
4/26	288	3.6	1210	68	0.05	5.8	0.69	5.51
4/28	273	1.5	1040	57	0.05	5.9	0.78	5.56
4/30	264	2.5	1235	16	0.25	5.9	0.63	7.99
5/3	285	1.0	1185	4	0.35	5.8	0.70	7.56
5/5	280	0.6	1168	5	0.35	5.9	0.72	7.41
5/7	282	1.5	1192	54	0.05	5.9	0.71	6.59
5/10	276	1.6	1202	9	0.33	5.9	0.69	7.29
5/12	261	0.7	1267	7	0.35	5.9	0.62	7.23
5/14	285	1.1	1245	25	0.20	5.9	0.68	7.77
5/17	305	0.7	1192	24	0.25	5.8	0.75	6.90
5/19	268	0.7	1152	24	0.25	5.9	0.69	6.76
5/21	286	2.0	997	20	0.25	5.9	0.85	6.86
5/23	290	1.8	1045	30	0.20	5.9	0.82	6.50
N	32	32	32	32	32	32	32	32
$\bar{x}$	277.1	2.27	1585.0	49.0	0.21	5.87	0.56	6.6
σ	19.38	1.57	453.7	54.8	0.11	0.05	0.16	1.51
C.V.%	7.00	69.1	28.6	111.9	52.5	0.91	28.6	2.3

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TABLE A-6. TOC DATA FOR 2 DAY CONTROL UNIT

Chemical Compound: Control θ_c = 2 days

Parameter: TOC Volume of Reactor = 2.85 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
7/7/80	227	26	1230	0	1.37	5.9	0.55	2.08
7/9	204	30	1410	4	1.42	6.2	0.45	1.98
7/11	234	62	970	16	1.4	5.9	0.72	1.93
7/23	110	12	660	72	1.38	5.9	0.50	1.52
7/25	75	13	760	34	0.53	5.9	0.29	3.70
7/28	155	5	410	220	0	5.9	1.13	0.90
7/30	200		1910	196	0	5.9	0.31	4.71
8/1	175	4	720	226	0	5.9	0.72	1.54
8/4	172	21	360	224	0	5.9	1.42	0.78
8/6	107	12	630	10	0	5.9	0.51	--
8/8	97	14	1140	0	1.26	5.9	0.25	2.26
8/11	171	10	1270	10	1.42	5.9	0.40	1.96
8/15	169	28	650	0	1.17	5.9	0.78	2.44
8/18	123	19	820	6	1.42	5.9	0.45	1.96
8/20	120	19	490	109	1.42	5.9	0.73	1.18
N	15	15	15	15	15	15	15	14
$\bar{x}$	222.5	18.8	895.3	75.1	0.85	5.92	0.61	2.07
σ	241.4	14.2	413.1	90.6	0.64	0.08	0.31	1.01
C.V.%	108.5	75.5	46.1	120.6	75.3	1.35	50.7	48.7

(continued)

TABLE A-6 (continued)

Chemical Compound: Control θ_c = 2 days

Parameter: TOC Volume of Reactor = 2.85 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
9/29/80	198	15	790	22	1.42	5.9	0.75	1.76
10/1	167	18	500	74	0.51	5.9	0.99	1.68
10/3	114	25	630	66	0.10	5.9	0.53	2.91
10/6	98	32	600	74	0	5.9	0.48	2.72
10/13	59	3	820	20	1.31	5.9	0.21	1.92
10/15	106	13	700	0	1.26	5.9	0.45	2.26
10/17	129	5	800	32	1.12	5.9	0.48	2.01
10/20	120	27	760	4	1.39	5.9	0.47	2.00
10/22	140	12	800	0	1.43	5.9	0.52	2.00
10/24	170	6	810	70	0.75	5.9	0.63	2.00
10/27	174	29	680	0	1.37	5.9	0.76	2.08
10/29	178	36	820	28	1.26	5.9	0.65	1.89
10/31	123	24	740	28	1.17	5.9	0.50	1.97
11/3	122	8	530	12	1.1	5.9	0.69	2.25
11/5	146	26	560	22	1.19	5.9	0.78	1.92
11/7	160	18	520	32	0.87	5.9	0.92	2.13
11/12	155	27	360	18	1.14	5.9	1.28	1.89
11/14	161	19	600	28	1.09	5.9	0.80	1.99
11/17	161	16	470	94	0	5.9	1.02	1.68
11/19	145	22	600	150	0	5.9	0.72	1.34
11/21	176	5	530	16	1.13	5.9	0.99	2.11
11/24	187	11	730	16	1.13	5.9	0.76	2.21
11/26	157	8	730	44	1.0	5.9	0.64	1.96
11/28	150	36	740	32	1.30	5.9	0.60	1.77
N	24	24	24	24	24	24	24	24
$\bar{x}$	146	18.3	659	36.8	0.960	5.9	0.692	2.02
σ	31.4	9.79	127	34.7	0.466	0	0.228	0.312
C.V.%	21.5	53.5	19.3	94.2	48.5	0	32.9	15.5

(continued)

TABLE A-7. TOC DATA FOR 3 DAY CONTROL UNIT

Chemical Compound: Control

Parameter: TOC

θ_c = 3 days

Volume of Reactor = 2.85 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/2/81	175	14	273	2	0.95	6.0	1.94	2.83
1/4	166	24	352	4	0.95	6.0	1.43	2.75
1/6	175	16	334	0	0.95	6.0	1.59	3.00
1/5	171	11	536	9	0.95	6.0	0.97	2.64
1/7	147	15	792	3	0.95	6.0	0.56	2.91
1/9	154	15	704	7	0.95	6.0	0.66	2.78
1/19	208	19	1012	10	0.95	6.0	0.62	2.78
1/21	167	19	1126	88	0.31	6.0	0.45	2.97
1/30	124	15.5	818	30	0.95	6.0	0.46	2.31
2/2	166	44	660	12	0.8	6.0	0.76	3.02
2/4	134	13.5	810	0	0.95	6.0	0.50	3.00
2/6	161	18	889	18	0.79	6.0	0.55	3.00
2/9	139	17	1250	0	0.95	6.0	0.34	3.00
2/11	160	22	836	19	0.95	6.0	0.58	2.53
2/13	140	28	1338	25	0.95	6.0	0.32	2.61
2/16	56	44.5	1056	165	0	6.0	0.16	2.11
2/18	124	12	660	86	0	6.0	0.57	2.53
2/25	82	17	616	30	0.95	6.0	0.40	2.15
2/27	178	19	757	32	0.95	6.0	0.71	2.24
N	10	19	19	19	19	19	19	19
$\bar{x}$	148.81	20.18	779.95	28.44	0.80	6.0	0.71	2.69
σ	34.02	9.13	285.58	40.68	0.31	0	0.45	0.30
C.V.%	22.86	45.23	36.6	143.0	38.7	0	62.65	11.05

TABLE A-8. TOC DATA FOR 4 day CONTROL UNIT

Chemical Compound: Control

θ_c = 4 days

Parameter: TOC

Volume of Reactor = 2.85 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
3/17/80	204	24	1320	2	0.70	5.8	0.45	4.01
3/19	208	21	1365	8	0.69	6.1	0.48	3.86
3/21	204	18	1300	2	0.70	5.9	0.46	4.00
3/24	184	16	1315	5	0.70	5.8	0.40	3.91
3/26	200	15	1440	39	0.50	5.9	0.42	3.98
3/29	186	9	1220	11	0.69	5.8	0.45	3.75
3/31	204	6	1275	36	0.50	5.8	0.48	3.95
4/2	228	9	1205	20	0.65	5.8	0.56	3.66
4/4	198	4	1305	10	0.69	5.8	0.45	3.81
4/6	196	10	1330	7	0.69	5.9	0.45	3.90
4/11	196	10	1167	26	0.65	5.8	0.49	3.47
4/13	200	15	1247	10	0.65	5.9	0.48	4.00
4/15	190	10	1590	9	0.70	5.9	0.36	3.83
4/17	200	19	1092	21	0.65	5.9	0.07	3.56
4/19	192	21	1645	15	0.69	5.9	0.35	3.74
4/21	172	24	1505	50	0.46	5.8	0.33	3.95
4/23	192	19	1960	4	0.70	5.9	0.29	3.98
4/26	192	6	1655	3	0.70	5.9	0.35	3.99
4/28	190	8	1375	10	0.70	5.9	0.42	3.77
4/30	196	8	1360	17	0.65	5.8	0.42	3.82
5/3	195	8	1517	1	0.70	5.9	0.39	4.04
5/5	202	10	1200	5	0.70	5.9	0.50	3.89
5/7	188	10	1275	6	0.70	5.9	0.45	3.87
5/10	218	10	1105	4	0.70	5.8	0.58	3.92
5/12	209	10	1185	12	0.65	5.8	0.52	3.91
5/14	208	17	1165	4	0.70	5.9	0.53	3.92
5/17	216	9	1255	22	0.65	5.8	0.50	3.63
5/19	206	17	1400	30	0.60	5.8	0.43	3.72
5/21	195	10	1247	28	0.60	5.9	0.46	3.67
5/23	204	11	1245	23	0.60	5.9	0.49	3.82
N	30	30	30	30	30	30	30	30
$\bar{x}$	199.1	12.9	1342.2	14.67	0.66	5.86	0.43	3.84
σ	10.8	5.4	183.2	12.2	0.06	0.07	0.09	0.14
C.V.%	5.4	42.2	13.7	83.2	9.8	1.13	21.9	3.70

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TABLE A-8 (continued)

Chemical Compound: Control θ_c = 4 days

Parameter: TOC Volume of Reactor = 2.85 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
7/7/80	227	9	1070	4	0.64	5.9	0.63	4.32
7/9	205	32	2750	4	0.69	5.9	0.22	4.09
7/11	234	27	2080	16	0.70	5.9	0.34	3.85
7/23	111	17	860	0	0.63	5.9	0.38	3.52
7/25	75	18	960	4	0.64	5.9	0.23	4.31
7/28	155	1	670	4	0	5.9	0.69	--
8/1	175	5	700	462	0	5.9	0.75	0.73
8/4	172	16	500	416	0	5.9	1.03	0.58
8/6	107	12	1370	38	0	5.9	0.23	1.74
8/8	97	12	1170	0	0.48	5.9	0.25	5.94
8/11	172	11	1140	10	0.71	5.9	0.45	3.77
8/15	169	26	1030	0	0.59	5.9	0.49	4.83
8/18	123	17	890	4	0.71	6.0	0.42	3.88
8/20	121	14	700	42	0.71	6.0	0.52	2.77
8/22	89	6	780	68	0.65	6.0	0.35	2.55
N	15	15	15	15	15	15	15	14
$\bar{x}$	148.8	14.8	1151.3	71.5	0.48	5.92	0.47	3.42
σ	48.6	8.4	587.8	146.2	0.29	0.04	0.22	1.50
C.V.%	32.7	56.8	51.1	204.5	60.4	0.68	4.72	43.8

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TABLE A-8 (continued)

Chemical Compound: Control

Parameter: TOC

θ_c = 4 days

Volume of Reactor = 2.85 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
9/29/80	198	4	940	6	0.71	5.9	0.75	3.75
10/1	167	26	790	16	0.60	5.9	0.63	3.75
10/10	127	14	700	20	0.47	5.9	0.54	4.08
10/13	59	2	920	20	0.49	5.9	0.19	4.29
10/15	106	15	480	8	0.56	5.9	0.32	4.45
10/17	129	12	920	80	0	5.9	0.42	3.86
10/20	120	17	1200	30	0.52	5.9	0.30	3.96
10/22	140	12	900	40	0.32	5.9	0.46	4.17
10/27	174	32	590	44	0.11	5.9	0.88	3.89
10/29	178	34	1090	16	0.52	5.9	0.49	4.47
10/31	123	27	1220	0	0.59	5.9	0.30	4.83
11/3	122	4	1360	16	0.56	5.9	0.27	4.36
11/5	146	19	890	25	0.40	5.9	0.49	4.54
11/7	160	25	680	6	0.61	5.9	0.70	4.19
11/10	164	29	800	2	0.69	5.9	0.61	4.02
11/12	155	28	680	12	0.66	5.9	0.68	3.57
11/14	161	15	750	6	0.54	5.9	0.64	4.02
11/17	161	10	750	28	0.41	5.9	0.64	4.00
11/19	145	22	1030	10	0.63	5.9	0.42	4.03
11/21	176	3	1470	18	0.70	5.9	0.36	3.58
11/24	187	8	1330	10	0.65	5.9	0.42	4.02
11/26	157	8	1640	4	0.65	5.9	0.29	4.26
11/28	150	6	1320	0	0.69	5.9	0.34	4.13
N	23	23	23	23	23	23	23	22
$\bar{x}$	148	16.1	1034	18.1	0.525	5.9	0.484	4.10
σ	29.8	9.77	222	17.6	0.177	0	0.179	0.31
C.V.%	20.2	60.7	21.5	97.3	33.7	0	36.3	7.5

TABLE A-9. TOC DATA FOR 5 DAY CONTROL UNIT

Chemical Compound: Control

Parameter: TOC

θ_c = 5 days

Volume of Reactor = 2.85 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
1/12/81	175	14	722	4	0.57	6.0	0.73	4.64
1/14	166	20	836	0	0.57	6.0	0.60	5.0
1/16	175	16	694	7	0.57	6.0	0.76	4.38
1/5	171	13	800	12	0.57	6.0	0.65	4.12
1/7	147	12	590	3	0.57	6.0	0.76	4.66
1/9	154	36	704	3	0.57	6.0	0.66	4.72
1/21	167	30	1126	88	0.31	6.0	0.45	5.01
1/23	179	4	268	268	0.0	6.0	0.96	4.59
2/13	140	6.0	1056	0	0.57	6.0	0.40	5.0
2/16	55.9	5.5	1778	12	0.51	6.0	0.10	5.05
2/18	124	3	1065	53	0.148	6.0	0.35	4.99
2/20	142	27	1698	23	0.46	6.0	0.25	4.99
N	12	12	12	12	12	12	12	12
$\bar{x}$	149.66	15.54	1099.17	14.08	0.50	6.0	0.56	4.76
σ	32.74	10.37	43.48	16.36	0.12	0	0.24	0.29
C.V.%	21.9	66.70	39.6	116.14	24.7	0	42.9	6.00

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TABLE A-10. TOC DATA FOR 8 DAY CONTROL UNIT

Chemical Compound: Control θ_c = 8 days

Parameter: TOC Volume of Reactor = 2.85 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
3/17/80	208	30	1870	14	0.32	5.9	0.42	7.17
3/19	212	18	1905	19	0.30	6.0	0.33	7.44
3/21	196	24	1820	30	0.25	5.9	0.32	7.38
3/24	180	38	2245	30	0.28	5.9	0.25	7.31
3/26	204	28	2375	59	0.23	5.9	0.26	6.55
3/29	184	27	2332	30	0.27	5.9	0.23	7.58
3/31	210	20	2435	18	0.30	5.8	0.26	7.93
4/2	208	30	2285	19	0.30	5.8	0.26	7.77
4/4	204	10	1897	201	0.50	5.8	0.32	2.14
4/6	232	14	2237	9	0.31	5.8	0.30	8.32
4/8	212	23	1990	76	0.1	5.8	0.32	6.86
4/11	240	11	1797	65	0.15	5.8	0.39	6.38
4/13	200	18	1775	21	0.30	5.8	0.33	7.21
4/15	186	20	1765	76	0.05	5.8	0.30	6.99
4/17	200	18	1618	56	0.10	5.9	0.37	7.30
4/19	190	24	1430	197	0.04	5.8	0.38	2.40
4.21	180	27	1200	221	0.04	5.9	0.45	1.78
4/23	184	13	1140	66	0.05	5.8	0.48	5.37
4/26	204	10	1210	68	0.05	5.8	0.[illegible]	5.52
4/28	196	16	1040	57	0.05	5.9	0.[illegible]	5.56
4/30	200	12	1235	16	0.25	5.9	0.4[illegible]	7.99
5/3	192	9	1185	4	0.35	5.8	0.48	7.56
5/5	197	10	1168	5	0.35	5.9	0.50	7.41
5/7	208	8	1192	54	0.05	5.9	0.52	6.59
5/10	206	10	1202	9	0.33	5.9	0.50	7.39
5/12	214	9	1267	7	0.35	5.9	0.50	7.22
5/14	218	11	1245	25	0.20	5.9	0.52	7.77
5/17	227	8	1192	24	0.25	5.8	0.56	6.90
5/19	208	12	1152	24	0.25	5.9	0.53	6.76
5/21	213	10	997	20	0.25	5.9	0.63	6.86
5/23	215	12	1045	30	0.25	5.9	0.62	5.86
N	31	31	31	31	31	31	31	31
$\bar{x}$	204.1	17.1	1588.6	50.0	0.22	5.86	0.41	6.56
σ	14.1	7.96	460.7	55.5	0.12	0.05	0.12	1.61
C.V.%	6.9	46.5	29.0	110.9	53.9	0.93	28.2	24.6

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TABLE A-11. COD DATA FOR 2,3,4,5 and 8 DAY CONTROL UNITS

Chemical Compound: Control				θ_c = 2 days				
Parameter: COD				Volume of Reactor = 2.85 liters				
Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
10/3/80	379	32	630	66	0.10	5.9	1.79	2.91
10/10	492	71	800	32	1.12	5.9	1.83	2.01
10/24	440	32	810	70	0.75	5.9	1.61	2.01
10/31	447	36	740	28	1.17	5.9	1.80	1.97
11/7	432	44	520	32	0.87	5.9	2.47	2.13
11/14	509	43	600	28	1.09	5.9	2.53	1.99
11/21	523	10	530	16	1.13	5.9	3.50	2.11
11/28	496	19.1	740	32	1.30	5.9	2.00	1.77
N	8	8	8	8	8	8	8	8
$\bar{x}$	477	35.8	671	38.0	0.941	5.9	2.19	2.11
σ	67.9	17.2	108	18.1	0.357	0	0.62	0.32
C.V.%	14.2	48.1	16.2	47.5	37.9	0	28.3	15.1

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TABLE A-11 (continued)

Chemical Compound: Control

Parameter: COD

θ_c = 4 days

Volume of Reactor = 2.85 liters

Date	Si mg/1	Se mg/1	X mg/1	Xe mg/1	Fw 1/day	F ml/min	F/M	θ_c days
3/15/80	452	32	1300	1	0.70	5.7	1.00	4.04
3/31	424	32	1275	36	0.50	5.8	0.98	3.95
4/15	456	16	1590	9	0.70	5.9	0.85	3.83
4/30	444	28	1360	17	0.65	5.8	0.95	3.81
5/14	456	32	1165	4	0.70	5.9	1.17	3.92
N	5	5	5	5	5	5	5	5
$\bar{x}$	446.4	28	1338	13.4	0.65	5.82	0.99	3.91
σ	12.03	6.20	140.96	12.53	8.05	0.07	0.10	0.08
C.V.%	2.69	22.14	10.54	93.51	12.38	1.23	10.5	2.06

Chemical Compound: Control

Parameter: COD

θ_c = 8 days

Volume of Reactor = 2.85 liters

Date	Si mg/1	Se mg/1	X mg/1	Xe mg/1	Fw 1/day	F ml/min	F/M	θ_c days
3/15	456	60	1475	18	0.30	5.9	0.92	7.12
3/31	432	22	2435	18	0.30	5.8	0.52	7.93
4/15	464	24	1765	76	0.05	5.8	0.78	6.99
4/30	440	16	1235	16	0.25	5.9	1.07	7.99
5/14	478	28	1245	25	0.20	5.9	1.14	7.77
N	5	5	5	5	5	5	5	5
$\bar{x}$	454.0	30	1631	30.6	0.22	5.86	0.89	7.56
σ	16.49	15.49	445.96	22.90	0.09	0.04	0.22	0.42
C.V.%	3.63	51.64	27.34	74.83	40.66	0.76	24.9	5.56

(continued)

TABLE A-11 (continued)

Chemical Compound: Control

Parameter: COD

θ_c = 3 days

Volume of Reactor = 2.85 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/9/81	465	58	704	7	0.95	6.0	2.00	2.76
1/12	440	64	334	0	0.95	6.0	3.99	3.00
1/30	412	35	818	30	0.95	6.0	1.53	2.31
2/6	443	59	889	18	0.79	6.0	1.51	3.00
2/13	495	45	1338	25	0.95	6.0	1.12	2.61
2/27	440	22	757	32	0.95	6.0	1.76	2.24
N	6	6	6	6	6	6	6	6
$\bar{x}$	449.0	47.18	806.67	18.67	0.92	6.0	1.99	2.65
σ	25.65	14.73	294.05	11.73	0.06	0	0.93	0.30
C.V.%	5.71	31.22	36.6	62.86	6.44	0	46.98	11.3

Chemical Compound: Control

Parameter: COD

θ_c = 4 days

Volume of Reactor = 2.85 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
10/17/80	492	79	920	80	0.0	5.9	1.59	3.86
10/31	447	28	1220	0	0.59	5.9	1.09	4.83
11/7	432	28	680	6	0.61	5.9	1.89	4.19
11/14	509	66	750	6	0.54	5.9	2.02	4.02
11/21	623	33	1470	18	0.70	5.9	1.26	3.58
11/28	496	12	1320	0	0.69	5.9	1.12	4.13
N	6	6	6	6	6	6	6	6
$\bar{x}$	500	40.9	1060	18.3	0.52	5.9	1.49	4.11
σ	61.5	23.7	295	28.2	0.24	0	0.365	0.38
C.V.%	12.3	58.0	27.8	154	45.6	0	24.5	9.2

(continued)

TABLE A-11 (continued)

Chemical Compound: Control θ_c = 5 days

Parameter: COD Volume of Reactor = 2.85 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/9/81	465	54	748	3.0	0.57	6.0	1.88	4.73
1/12	440	51	694	7.0	0.57	6.0	1.92	4.38
1/23	486	48	1584	10	0.57	6.0	0.93	4.59
2/13	495	29	1056	0	0.57	6.0	1.42	5.00
2/20	425	20	1698	23	0.46	6.0	0.76	4.99
N	5	5	5	5	5	5	5	5
$\bar{x}$	462.2	40.52	1156.0	8.6	0.55	6.0	1.38	4.74
σ	26.43	13.45	414.32	7.93	0.04	0	0.47	0.24
C.V.%	5.72	33.2	35.84	92.16	8.00	0	34.23	4.99

(continued)

TABLE A-11 (continued)

Chemical Compound: Control
Parameter: COD

θ_c = 2 days
Volume of Reactor = 2.85 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
7/18/80	646	46	840	0	0.540	5.9	2.29	5.28
7/25	376	27	760	34	0.530	5.9	1.47	3.70
7/30	519	28	1910	196	0	5.9	0.81	4.71
8/8	459	59	1140	0	1.26	5.9	1.20	2.26
8/25	426	87	530	92	0	5.9	2.39	2.78
N	10	5	5	5	5	5	5	5
$\bar{x}$	485.1	49.48	1036	64.4	0.47	5.9	1.63	3.75
σ	93.04	22.3	476.2	73.5	0.46	0	0.62	1.13
C.V.%	19.2	45.1	45.9	114.1	97.9	0	37.8	30.2

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TABLE A-11 (continued)

Chemical Compound: Control
Parameter: COD

θ_c = 4 days
Volume of Reactor = 2.85 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
7/18/80	646	42	820	2	0.690	5.9	2.35	4.06
7/25	376	65	960	4	0.640	5.9	1.17	4.31
7/30	519	24	1110	114	0	5.9	1.39	4.70
8/8	459	43	1170	0	0.48	5.9	1.17	5.94
8/25	426	74	810	172	0	5.9	1.5	2.27
N	5	5	5	5	5	5	5	5
$\bar{x}$	485.1	49.6	974.0	58.4	0.36	5.9	1.53	4.26
σ	92.5	17.7	145.9	71.1	0.30	0	0.43	1.19
C.V.%	19.1	35.7	15.0	121.8	83.3	0	28.5	27.8

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TABLE A-12. BOD_5 DATA FOR 2 DAY TETRACHLOROETHANE UNIT

Chemical Compound: Tetrachloroethane θ_c = 2 days

Parameter: BOD_5 Volume of Reactor = 3.13 liters

Date	Si	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
3/17/80	253	5.7	610	3	1 50	6.4	1.22	2.04
3/19	263	0.6	540	0	1.50	6.6	1.48	2.09
3/21	285	1.7	570	0	1.50	6.5	1.50	2.09
3/24	221	0.2	510	6	1.50	6.1	1.20	1.97
3/31	215	2.9	840	12	1.50	6.4	0.75	1.94
4/7	250	1.0	440	0	1.45	6.1	1.58	2.15
4/9	220	< 1	550	90	0.75	6.2	1.14	1.15
4/11	245	0.6	555	187	0.80	6.3	1.27	0.87
4/14	200	2.2	370	212	0.75	6.3	1.57	0.56
4/16	216	1.7	690	24	1.3	6.3	0.91	1.99
4/18	205	2.2	770	103	1.0	6.1	0.75	1.53
4/21	205	2.5	440	200	0.93	6.0	1.28	0.70
4/23	346	3.9	250	252	0	6.2	3.95	0.35
4/25	191	2.9	250	0	1.5	6.2	2.17	2.08
4/28	232	3.2	910	14	1.50	6.1	0.72	1.94
4/30	251	2.3	390	248	0.75	6.1	1.80	0.53
5/2	287	4.6	200	164	0	6.5	4.29	0.41
5/5	261	2.1	330	158	0	6.0	2.19	0.76
5/7	250	4.1	570	2	1.30	6.1	1.22	2.36
5/9	299	2.9	800	36	0.75	6.4	1.09	2.77
5/12	305	1.0	420	4	1.40	6.4	2.13	2.12
5/14	285	3.8	6.0	12	1.37	6.2	1.32	2.06
5/16	238	1.4	1110	40	0.60	5.8	0.58	3.56
5/19	207	0.7	500	10	1.5	6.0	1.14	1.91
5/21	225	0.5	500	172	.255	6.2	1.28	0.97
5/23	272	0.9	230	164	0	6.6	3.59	0.46
N	26	26	26	26	26	26	26	26
$\bar{x}$	247.2	2.52	536.7	81.3	0.98	6.23	1.62	1.6
σ	37.3	2.03	216.5	88.6	0.54	0.20	0.94	0.81
C.V.%	15.1	80.7	40.3	109.0	55.4	3.1	58.0	50.6

TABLE A-13. BOD$_5$ DATA FOR 4 DAY TETRACHLOROETHANE UNIT

Chemical Compound: Tetrachloroethane θ_C = 4 days

Parameter: BOD$_5$ Volume of Reactor = 3.14 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_C days
3/17/80	253	4.0	1170	12	0.75	6.5	0.65	3.75
3/19	263	0.6	970	4	0.75	6.5	0.81	4.00
3/21	285	4.0	970	12	0.75	6.4	0.86	3.67
3/24	221	1.3	1010	83	0.70	6.2	0.62	3.94
3/28	155	0.7	1210	152	0	6.1	0.36	2.85
3/31	215	1.7	1090	46	0.75	6.6	0.49	2.80
4/4	243	0.6	620	244	0.30	6.5	1.17	0.81
4/7	250	0.6	630	4	0.75	5.8	1.05	3.93
4/9	220	1.0	590	2	0.75	5.6	2.25	0.36
4/11	245	0.2	780	0	0.70	6.0	0.86	4.49
4/14	200	1.5	820	2	0.75	6.2	0.69	4.08
4/16	216	1.1	800	8	0.60	6.8	0.26	4.53
4/18	205	1.5	1250	8	0.70	6.1	0.46	4.18
4/21	205	1.8	860	100	0	6.2	0.68	3.01
4/23	346	2.7	1350	0	0.775	6.3	0.73	4.05
4/25	191	2.6	1150	4	0.75	6.4	0.38	4.02
4/28	232	6.0	930	18	0.75	6.2	0.71	3.40
4/30	251	1.8	1100	6	0.70	6.5	0.68	4.20
5/2	287	1.8	1090	0	0.75	6.4	0.78	4.18
5/5	261	1.8	360	30	0	6.1	2.03	4.29
5/7	250	2.7	1230	14	0.75	6.0	0.56	3.74
5/9	299	1.8	1350	38	0.50	6.2	0.63	4.26
5/12	305	2.6	450	6	0.75	6.2	1.93	3.66
5/14	285	4.1	1480	16	0.50	6.0	0.53	5.34
5/16	238	1.6	2160	10	0.60	6.2	0.32	4.92
5/19	207	2.2	1110	0	0.75	5.5	0.48	4.19
5/21	225	2.7	1360	10	0.70	6.3	0.48	4.12
5/23	272	2.2	650	2	0.75	5.8	1.11	4.06
N	28	28	28	28	28	28	28	28
$\bar{x}$	243.8	2.04	1019.6	29.7	0.62	6.38	0.81	3.75
σ	39.7	1.26	359.0	53.6	0.24	0.93	0.49	1.02
C.V.%	16.3	61.8	35.2	180.6	38.2	14.6	60.7	27.3

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TABLE A-14. BOD$_5$ DATA FOR 6 DAY TETRACHLOROETHANE UNIT

Chemical Compound: Tetrachloroethane θ_c = 6 days

Parameter: BOD$_5$ Volume of Reactor = 3.04 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
3/17/80	253	1.6	1570	17	0.325	6.4	0.49	7.22
3/19	263	1.6	1300	2	0.325	6.3	0.60	8.98
3/21	285	4.0	1650	24	0.325	6.5	0.53	6.66
3/24	221	2.8	1630	14	0.300	6.2	0.40	8.13
3/28	155	1.3	1720	6	0.300	6.5	0.27	9.17
3/31	215	0.7	1970	8	0.300	6.5	0.33	9.03
4/4	243	1.2	2120	6	0.300	6.25	0.35	9.36
4/7	250	1.1	2290	8	0.375	6.4	0.33	7.49
4/9	220	1.3	2280	2	0.375	6.5	0.29	7.94
4/11	245	2.4	2192	16	0.35	6.7	0.36	6.86
4/14	200	2.4	2280	6	0.375	6.3	0.12	2.06
4/16	216	1.3	2520	8	0.35	6.9	0.27	7.99
4/18	205	0.8	2420	60	0.175	6.0	0.23	7.90
4/21	205	1.9	2280	10	0.33	6.2	0.26	8.26
4/23	346	3.2	2280	12	0.325	6.2	0.45	8.21
4/25	191	5.0	1850	14	0.325	6.2	0.30	7.79
4/28	232	2.0	2210	32	0.25	5.7	0.29	8.32
4/30	251	0.8	1890	132	0	6.25	0.39	4.84
5/2	287	1.9	2450	20	.325	6.3	0.35	7.67
5/5	261	1.2	1580	52	0	6.1	0.48	10.52
5/7	250	2.5	2360	320	0	6.1	0.14	2.00
5/9	299	2.0	2040	230	0	6.2	0.43	3.02
5/12	305	2.3	8850	6	0.375	6.4	0.10	7.98
5/14	285	5.2	2440	16	0.30	6.4	0.32	8.63
5/16	238	1.7	2350	22	0.10	5.8	0.27	17.15
5/19	207	1.2	2040	128	0	6.4	0.30	5.26
5/21	225	0.5	2270	104	0	6.4	0.30	7.20
5/23	272	1.6	2310	184	0	6.1	0.35	4.34
N	28	28	28	28	28	28	28	28
$\bar{x}$	243.8	1.98	2337.2	52.1	0.23	6.29	0.33	7.5
σ	39.7	1.16	1294.1	77.4	0.15	0.24	0.11	2.80
C.V.%	16.3	58.4	55.4	148.5	63.1	3.8	34.4	37.3

TABLE A-15. TOC DATA FOR 2 DAY TETRACHLOROETHANE UNIT

Chemical Compound: Tetrachloroethane θ_c = 2 days

Parameter: TOC Volume of Reactor = 3.13 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θc days
3/17/80	222	20	610	3	1.50	6.4	1.07	2.04
3/19	197	7	540	0	1.50	6.6	1.02	2.09
3/21	149	32	570	0	1.50	6.5	.78	2.09
3/24	191	23	510	6	1.50	6.1	1.05	1.97
3/31	322	42	840	12	1.50	6.4	1.12	1.94
4/7	246	1.0	440	0	1.45	6.1	1.57	2.16
4/9	218	1.0	550	90	0.75	6.2	1.14	1.50
4/11	200	0.6	555	187	0.8	6.3	1.05	0.87
4/14	208	22	370	212	0.75	6.3	1.63	0.57
4/16	215	1.7	690	24	1.3	6.3	0.91	1.99
4/18	236	2.2	770	103	1.0	6.1	0.86	1.53
4/21	241	2.5	440	200	0.93	6.0	1.51	0.71
4/23	205	3.9	250	252	0	6.2	2.33	0.35
4/25	217	2.9	250	0	1.5	6.2	2.48	2.09
4/28	231	3.2	910	14	1.5	6.1	0.71	1.94
4/30	204	2.3	390	248	0.75	6.1	1.47	0.53
5/2	210	4.6	200	164	0	6.5	3.14	0.41
5/5	236	2.1	330	158	0	6.0	1.97	0.76
5/7	226	4.1	570	2	1.5	6.1	1.11	2.05
5/9	246	2.9	800	36	0.75	6.4	0.91	2.77
5/12	227	9.7	420	4	1.4	6.4	1.60	2.12
5/14	246	3.8	610	12	1.37	6.2	1.15	2.06
5/16	237	1.4	1110	40	0.6	5.8	0.58	3.56
5/19	187	28	500	10	1.5	6.0	1.04	1.91
5/21	220	14	500	172	0.255	6.2	1.25	0.97
5/23	227	18	230	164	0.0	6.6	3.00	0.46
N	26	26	26	26	26	26	20	26
$\bar{x}$	221.7	9.84	536.7	81.3	0.98	6.23	1.40	1.59
σ	29.4	11.18	216.5	88.6	0.54	0.2	0.66	0.80
C.V.%	13.3	113.6	40.3	109.0	55.4	3.1	47.2	50.3

TABLE A-16. TOC DATA FOR 4 DAY TETRACHLOROETHANE UNIT

Chemical Compound: Tetrachloroethane θ_c = 4 days

Parameter: TOC Volume of Reactor = 3.14 days

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
3/17/80	222	21	1170	12	0.75	6.5	0.56	3.75
3/19	197	12	970	4	0.75	6.5	0.60	4.00
3/21	149	30	970	12	0.60	6.4	0.45	4.44
3/24	191	19	1010	83	0.70	6.2	0.53	2.28
3/28	257	43	1210	152	0	6.1	0.59	2.85
3/31	322	19	1090	46	0.75	6.6	0.89	2.80
4/4	256	34	620	244	0.30	6.5	1.22	0.81
4/7	246	0.6	630	4	0.75	5.8	1.04	3.93
4/9	218	1.0	590	2	0.75	5.6	0.95	4.05
4/11	200	0.2	780	0	0.70	6.0	0.70	4.49
4/14	208	1.5	820	2	0.75	6.2	0.72	4.08
4/16	215	1.1	800	8	0.60	6.8	0.84	4.54
4/18	236	1.5	1250	8	0.70	6.1	0.53	4.18
4/21	241	1.8	860	100	0	6.2	0.79	3.02
4/23	205	2.7	1350	0	0.775	6.3	0.43	4.05
4/25	217	2.6	1150	4	0.75	6.4	0.55	4.03
4/28	231	6.0	930	18	0.75	6.2	0.71	3.46
4/30	204	1.8	1100	6	0.70	6.5	0.56	4.20
5/2	210	1.8	1090	0	0.75	6.4	0.56	4.19
5/5	236	1.8	360	30	0	6.1	0.55	4.29
5/7	226	2.7	1230	14	0.75	6.0	0.50	3.74
5/9	246	1.8	1350	38	0.5	6.2	0.59	4.26
5/12	227	2.6	450	6	0.75	6.2	1.44	3.66
5/14	246	4.1	1480	16	0.5	6.0	0.46	5.34
5/16	237	1.6	2160	10	0.6	6.2	0.32	4.92
5/19	187	34	1110	0	0.75	5.5	0.43	4.19
5/21	220	18	1360	10	0.70	6.3	0.46	4.12
5/23	227	17	650	2	0.75	5.8	0.94	4.06
N	28	28	28	28	28	28	28	28
$\bar{x}$	224.2	10.15	1019.6	29.7	0.62	6.38	0.68	3.85
σ	29.7	12.2	359.0	53.6	0.24	0.95	0.25	0.87
C.V.%	13.2	110.0	55.4	148.5	63.1	3.8	37.3	33.3

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TABLE A-17. TOC DATA FOR 6 DAY TETRACHLOROETHANE UNIT

Chemical Compound: Tetrachloroethane θ_c = 6 days

Parameter: TOC Volume of Reactor = 3.04 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
3/17/80	222	19	1570	17	0.325	6.4	0.43	7.22
3/19	197	15	1300	2	0.375	6.3	0.45	8.98
3/21	149	31	1650	24	0.15	6.5	0.27	10.79
3/24	191	18	1630	14	0.300	6.2	0.35	8.13
3/28	257	19	1720	6	0.300	6.5	0.46	9.17
3/31	322	19	1970	8	0.300	6.5	0.50	9.03
4/4	256	31	2120	6	0.300	6.25	0.36	9.36
4/17	246	1.1	2290	8	0.375	6.4	0.33	7.49
4/9	218	1.3	2280	2	0.375	6.5	0.29	7.94
4/11	200	2.4	2192	16	0.35	6.7	0.29	7.28
4/14	208	1.4	2280	6	0.375	6.3	0.27	7.64
4/16	215	1.3	2520	8	0.35	6.9	0.27	7.99
4/18	236	0.8	2620	60	0.175	6.0	0.27	7.90
4/21	241	1.9	2280	10	0.33	6.2	0.32	8.27
4/23	205	3.2	2280	12	0.325	6.2	0.26	8.21
4/25	217	5.0	1850	14	0.325	6.2	0.36	7.79
4/28	231	2.0	2210	32	0.25	5.7	0.29	8.32
4/30	204	0.8	1890	132	0	6.25	0.32	4.84
5/2	210	1.9	2450	20	0.325	6.3	0.26	7.67
5/5	236	1.2	1580	52	0	6.1	0.43	10.52
5/7	226	2.5	2360	320	0	6.1	0.27	2.55
5/9	246	2.0	2040	230	0	6.2	0.36	3.02
5/12	227	2.3	8850	6	0.375	6.4	0.07	7.98
5/14	246	5.2	2740	16	0.3	6.4	0.27	8.63
5/16	237	1.7	2350	22	0.1	5.8	0.27	17.15
5/19	187	27	2040	128	0	6.4	0.27	5.26
5/21	220	16	2270	104	0	6.4	0.29	7.20
5/23	227	16	2310	184	0	6.6	0.30	4.01
N	28	28	28	28	28	28	0.28	28
$\bar{x}$	224.2	8.89	2337.2	52.1	0.23	6.29	0.32	7.87
σ	29.7	9.78	1294.1	77.4	0.15	0.24	0.08	2.62
C.V.%	13.2	110.0	55.4	148.5	63.1	3.8	25.9	33.3

TABLE A-18. COD DATA FOR 2 DAY TETRACHLOROETHANE UNIT

Chemical Compound: Tetrachloroethane θ_c = 2 days

Parameter: COD Volume of Reactor = 3.13 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	c days
3/19 /80	503	16	540	0	1.5	6.6	2.82	2.09
4/2	471	31	--	-	1.5	6.3	--	--
4/16	500	23	690	24	1.3	6.3	2.10	1.99
4/30	453	10	390	248	0.75	6.1	3.25	0.53
5/14	554	32	610	12	1.37	6.2	2.59	2.06
N	5	5	4	4	5	5	4	4
$\bar{x}$	496.2	22.4	557.5	71.0	1.28	6.3	2.69	1.67
σ	34.2	8.5	110.8	103.0	0.28	0.17	0.42	0.66
C.V.%	6.9	37.8	19.9	145.1	21.6	2.64	15.4	39.6

TABLE A-19. COD DATA FOR 4 DAY TETRACHLOROETHANE UNIT

Chemical Compound: Tetrachloroethane θ_c = 4 days

Parameter Volume of Reactor = 3.14 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
3/19/80	503	19	970	4	0.75	6.5	1.54	4.00
4/2	471	27	--	-	0.60	6.4	--	--
4/16	500	27	800	8	0.60	6.8	1.94	4.54
4/30	453	10	1100	6	0.70	6.5	1.24	4.20
5/14	554	28	1480	16	0.50	6.0	1.04	5.34
N	5	5	4	4	5	5	4	4
$\bar{x}$	496.2	22.2	1087.5	8.5	0.63	6.44	1.44	4.52
σ	34.2	6.88	251.5	4.58	0.09	0.26	0.34	0.51
C.V.%	6.9	31.0	23.1	53.8	13.8	3.98	2.35	11.4

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TABLE A-20. COD DATA FOR 6 DAY TETRACHLOROETHANE UNIT

Chemical Compound: Tetrachloroethane θ_c = 6 days

Parameter: COD Volume of Reactor = 3.04 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
3/19 /80	503	18	1300	2	0.325	6.3	1.15	8.98
4/2	471	19	--	--	0.300	6.5	--	--
4/16	500	23	2520	8	0.35	6.9	0.65	7.99
4/30	453	6	1890	132	0	6.25	0.71	4.84
5/14	554	28	2740	16	0.30	6.4	0.62	8.63
N	5	5	4	4	5	5	4	4
$\bar{x}$	496.2	18.8	2112.5	39.5	0.26	6.47	0.78	7.6
σ	34.2	7.3	565.9	53.9	0.13	5.12	0.22	1.65
C.V.%	6.9	38.7	26.8	136.4	49.3	79.2	2.75	21.7

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TABLE A-21. BOD_5 DATA FOR 2 DAY NITROBENZENE UNIT

Chemical Compound: Nitrobenzene

Parameter: BOD_5

θ_c = 2 days

Volume of Reactor = 3.26 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
3/15/80	310	8.4	236	14	1.5	6.3	3.66	1.67
3/17	242	4.9	437	14	1.5	5.6	1.37	1.90
3/19	250	3.1	688	10	1.5	6.9	1.11	2.01
3/24	203	3.3	720	5	1.5	6.0	0.68	2.08
3/26	288	3.5	820	7	1.5	6.3	5.44	2.08
3/28	238	2.5	408	5	1.5	6.0	1.56	2.05
3/31	226	2.5	492	4	1.5	6.8	1.38	2.08
4/2	246	2.7	768	7	1.5	6.3	0.89	2.08
4/4	316	5.3	168	4	1.5	6.5	5.39	1.93
4/7	178	1.4	744	10	1.5	6.3	0.66	2.03
4/9	235	4.3	340	16	1.5	7.4	2.26	1.69
4/11	251	4.9	568	17	1.5	6.2	1.21	1.89
4/14	226	2.9	528	116	1.5	5.9	1.11	1.07
4/16	--	--	560	23	1.5	6.4	--	1.80
4/18	293	3.7	372	6	1.5	6.9	2.40	1.99
4/21	284	4.1	452	31	1.5	5.4	1.50	1.69
4/23	241	2.3	796	3	1.5	6.7	0.89	2.13
4/25	255	2.5	732	2	1.5	6.3	0.96	2.14
4/28	216	1.9	676	19	1.5	6.1	0.86	1.92
4/30	253	2.0	830	5	1.5	6.5	0.88	2.10
5/2	227	1.9	752	8	1.5	6.2	0.82	2.06
5/5	278	2.4	664	15	1.5	6.2	1.15	1.95
5/7	297	3.1	832	20	1.5	6.3	0.99	1.93
5/9	269	2.9	476	7	1.5	6.4	1.60	2.02
5/12	262	2.9	528	5	6.6	6.6	2.98	2.07
5/14	236	2.4	424	20	1.5	6.0	1.48	1.77
5/16	263	5.7	416	16	1.5	6.0	1.68	1.83
5/19	233	3.6	452	13	1.5	6.2	1.41	1.90
5/21	264	1.6	590	11	1.5	6.6	1.31	1.97
5/23	294	4.8	476	46	1.5	6.4	1.74	1.45
N	29	29	30	30	30	30	29	30
$\bar{x}$	254.1	3.35	564.8	15.9	1.5	6.31	1.70	1.91
σ	31.5	1.47	176.8	20.6	0	0.4	1.21	0.22
C.V.%	12.4	43.8	31.3	129.8	0	6.3	72.2	11.6

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TABLE A-22. BOD_5 DATA FOR 4 DAY NITROBENZENE UNIT

Chemical Compound: Nitrobenzene — θ_c = 4 days

Parameter: BOD_5 — Volume of Reactor = 3.07 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
3/15/80	310	3.2	992	4	0.75	6.7	0.98	3.90
3/17	242	2.2	1152	8	0.75	6.8	0.68	3.77
3/19	250	2.6	1700	4	0.75	5.9	0.40	3.99
3/24	203	--	1704	8	0.75	6.2	0.35	3.89
3/26	288	6.0	1192	89	0.75	7.6	0.86	2.02
3/28	238	1.9	1324	5	0.75	6.4	0.55	3.92
3/31	226	2.8	2012	3	0.75	6.4	0.33	4.02
4/2	246	3.4	1816	28	0.75	6.3	0.40	3.49
4/4	316	5.9	2080	1	0.75	6.7	0.48	4.06
4/7	178	3.7	2132	7	0.75	6.3	0.24	3.95
4/9	235	2.2	1568	9	0.75	4.8	0.33	3.90
4/11	251	3.4	1632	6	0.75	6.1	0.45	3.93
4/14	226	1.3	1608	5	0.75	6.2	0.40	3.95
4/16	--	--	1652	108	0.75	6.5	--	2.33
4/18	293	0.8	2528	42	0.75	6.4	0.35	3.44
4/21	284	2.4	1428	16	0.75	6.5	0.60	3.62
4/23	241	2.4	1924	0	0.75	6.4	0.37	4.09
4/25	255	3.2	1548	6	0.75	6.8	0.53	3.90
4/28	216	1.1	1528	14	0.75	6.3	0.42	3.71
4/30	253	0.9	1532	4	0.75	6.3	0.49	3.97
5/2	227	2.4	1496	6	0.75	6.8	0.49	3.90
5/5	278	3.0	1424	5	0.75	6.1	0.56	3.94
5/7	297	3.1	1552	12	0.75	6.3	0.56	3.77
5/9	269	3.2	1492	3	0.75	6.2	0.52	4.00
5/12	262	5.0	1268	27	0.75	6.3	0.60	3.32
5/14	236	1.3	1200	9	0.75	6.3	0.58	3.78
5/16	263	0.8	1428	4	0.75	6.4	0.55	3.96
5/19	233	1.7	1410	12	0.75	6.0	0.46	3.75
5/21	264	1.7	1568	6	0.75	6.5	0.52	3.91
5/23	294	4.7	1472	5	0.75	6.3	0.59	3.94
N	29	28	30	30	30	30	29	30
$\bar{x}$	254.1	2.7	1578.7	15.2	0.75	6.35	0.51	3.7
σ	31.5	1.38	313.7	24.0	0	0.42	0.15	0.45
C.V.%	12.4	50.9	19.9	157.8	0	6.7	29.6	12.3

TABLE A-23. BOD$_5$ DATA FOR 6 DAY NITROBENZENE UNIT

Chemical Compound: Nitrobenzene — θ_c = 6 days

Parameter: BOD$_5$ — Volume of Reactor=3.13 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
3/15/80	310	2.0	1672	--	0.375	6.1	0.52	8.34
3/17	242	3.0	1916	12	0.375	6.4	0.37	7.27
3/19	250	2.1	1984	2	0.375	6.4	0.37	8.15
3/24	203	--	1796	27	0.375	6.9	0.36	6.03
3/26	288	1.5	3036	17	0.375	6.3	0.27	7.38
3/28	238	1.7	1928	5	0.375	6.1	0.35	7.89
3/31	226	2.8	2420	6	0.375	8.0	0.35	7.77
4/2	246	<1	2184	7	0.375	6.5	0.33	7.75
4/4	316	2.7	1968	2	0.375	6.1	0.45	8.16
4/7	178	2.0	2380	8	0.375	6.5	0.23	7.72
4/9	235	1.1	2416	7	0.375	5.6	0.24	7.88
4/11	251	3.8	2264	3	0.375	6.3	0.32	8.09
4/14	226	1.8	3.44	30	0.375	6.3	0.20	6.84
4/16	--	--	2228	12	0.375	6.0	--	7.46
4/18	293	0.9	2160	10	0.375	5.1	0.32	7.68
4/21	284	1.1	2208	18	0.375	6.3	0.37	7.03
4/23	241	0.8	2316	5	0.375	6.5	0.32	7.93
4/25	255	2.0	2368	11	0.375	6.1	0.33	7.47
4/28	216	0.6	2708	11	0.375	7.1	0.26	7.54
4/30	253	0.7	2216	2	0.375	7.2	.37	8.14
5/2	227	1.7	2244	1	0.375	6.9	0.32	8.25
5/5	278	2.2	2212	3	0.375	5.8	0.33	8.11
5/7	297	1.3	2196	8	0.375	6.4	0.40	7.68
5/9	269	2.3	1984	2	0.375	6.6	0.42	8.14
5/12	262	4.4	2032	2	0.375	6.3	0.37	8.16
5/14	236	2.7	1760	836	0.375	6.3	0.39	0.70
5/16	263	0.6	1352	252	0.375	6.1	0.55	1.61
5/19	233	1.2	1435	8	0.375	6.1	0.46	7.42
5/21	264	1.0	1408	6	0.375	6.2	0.53	7.60
5/23	294	2.0	1598	5	0.375	7.4	0.63	7.68
N	29	28	30	30	30	30	29	30
$\bar{x}$	254.1	1.8	2101.1	44.0	0.375	6.4	0.37	7.3
σ	31.5	0.93	425.2	153.2	0	0.54	0.10	1.7
C.V.%	12.4	51.5	20.2	348.2	0	8.4	26.1	23.3

TABLE A-24. TOC DATA FOR 2 DAY NITROBENZENE UNIT

Chemical Compound: Nitrobenzene

θ_c = 2 days

Parameter: TOC

Volume of Reactor = 3.27 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
3/15/80	188	6	236	14	1.5	6.3	2.21	1.67
3/17	249	18	437	14	1.5	5.6	1.41	1.91
3/19	191	61	688	10	1.5	6.9	0.84	2.01
3/24	241	21	720	5	1.5	6.0	0.88	2.09
3/26	229	34	820	7	1.5	6.3	0.77	2.08
3/28	257	49	408	5	1.5	6.0	1.66	2.05
3/31	416	38	492	4	1.5	6.8	2.53	2.08
4/2	252	61	768	7	1.5	6.3	0.91	2.08
4/4	282	90	168	4	1.5	6.5	4.80	1.93
4/7	232	46	744	10	1.5	6.3	0.87	2.04
4/9	264	78	340	16	1.5	7.4	2.45	1.69
4/11	227	53	568	17	1.5	6.2	1.09	1.89
4/14	254	80	528	116	1.5	5.7	1.21	1.09
4/16	268	69	560	23	1.5	6.4	1.35	1.80
4/18	245	57	372	6	1.5	6.9	2.00	1.99
4/21	286	49	452	31	1.5	5.4	1.51	1.69
4/23	216	13	796	3	1.5	6.7	0.81	2.13
4/25	267	38	732	2	1.5	6.3	1.01	2.14
4/28	259	28	676	19	1.5	6.1	1.04	1.92
4/30	293	45	830	5	1.5	6.5	1.01	2.11
5/2	198	41	752	8	1.5	6.2	0.72	2.06
5/5	241	27	664	15	1.5	6.2	0.99	1.95
5/7	269	31	832	20	1.5	6.3	0.89	1.94
5/9	269	33	476	7	1.5	6.4	0.89	1.94
5/12	264	30	528	5	1.5	6.6	1.45	2.07
5/14	223	37	424	20	1.5	6.0	1.38	1.77
5/16	245	37	416	16	1.5	6.0	1.56	1.84
5/19	206	46	452	13	1.5	6.2	1.24	1.91
5/21	302	30	590	11	1.5	6.6	1.48	1.98
5/23	255	40	476	46	1.5	6.4	1.51	1.46
N	30	30	30	30	30	30	30	30
$\bar{x}$	252.9	42.8	564.8	15.9	1.5	6.31	1.42	1.91
σ	41.3	19.1	176.8	20.6	0	0.4	0.79	0.22
C.V.%	16.3	44.7	31.3	129.8	0	6.3	55.6	1.1

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TABLE A-25. TOC DATA FOR 4 DAY NITROBENZENE UNIT

Chemical Compound: Nitrobenzene

Parameter: TOC

θ_c = 4 days

Volume of Reactor = 3.07 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
3/15/80	188	47	992	4	0.75	6.7	0.60	3.90
3/17	249	11	1152	8	0.75	6.8	0.69	3.66
3/19	191	38	1700	4	0.75	5.9	0.31	3.99
3/24	241	17	1704	8	0.75	6.2	0.41	3.88
3/26	229	40	1192	89	0.75	7.6	0.68	2.02
3/28	257	43	1324	5	0.75	6.4	0.58	3.92
3/21	416	21	2012	3	0.75	6.4	0.62	4.02
4/2	252	29	1816	28	0.75	6.3	0.41	3.49
4/4	282	60	2080	1	0.75	6.7	0.43	4.06
4/7	232	29	2132	7	0.75	6.5	0.33	3.95
4/9	264	33	1568	9	0.75	4.8	0.37	3.90
4/11	227	26	1632	6	0.75	6.1	0.40	3.93
4/14	254	50	1608	5	0.75	6.2	0.46	3.95
4/16	268	55	1652	108	0.75	6.5	0.50	2.33
4/18	245	27	2528	42	0.75	6.4	0.29	3.44
4/21	286	43	1428	16	0.75	6.5	0.60	3.62
4/23	216	7	1924	0	0.75	6.4	0.46	4.08
4/25	267	12	1548	6	0.75	6.8	0.55	3.90
4/28	259	23	1528	14	0.75	6.3	0.50	3.71
4/30	293	27	1532	4	0.75	6.3	0.56	3.97
5/2	198	14	1496	6	0.75	6.8	0.42	3.90
5/5	241	43	1424	5	0.75	6.1	0.49	3.94
5/7	269	15	1552	12	0.75	6.3	0.50	3.77
5/9	269	13	1492	3	0.75	6.2	0.52	4.00
5/12	264	25	1268	27	0.75	6.3	0.60	3.32
5/14	223	17	1200	9	0.75	6.3	0.55	3.77
5/16	245	20	1428	4	0.75	6.4	0.52	3.96
5/19	206	24	1410	12	0.75	6.0	0.42	3.75
5/21	302	65	1568	6	0.75	6.5	0.59	3.91
5/23	255	14	1472	5	0.75	6.3	0.52	3.94
N	30	30	30	30	30	30	30	30
$\bar{x}$	253.9	29.6	1578.7	15.2	0.75	6.4	0.50	3.7
σ	41.3	15.2	313.7	24.0	0	0.42	0.10	0.45
C.V.%	16.3	51.4	19.9	157.8	0	6.7	20.0	12.3

TABLE A-26. TOC DATA FOR 6 DAY NITROBENZENE UNIT

Chemical Compound: Nitrobenzene

Parameter: TOC

θ_c = 6 days

Volume of Reactor = 3.13 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
3/15/80	188	58	1672	0	0.375	6.1	0.32	8.34
3/17	249	7	1916	12	0.375	6.4	0.38	7.27
3/19	191	18	1984	2	0.375	6.4	0.28	8.15
3/24	241	17	1796	27	0.375	6.9	0.43	6.03
3/26	229	53	3036	17	0.375	6.3	0.22	7.38
3/28	257	19	1928	5	0.375	6.1	0.37	7.88
3/31	416	81	2420	6	0.375	8.0	0.63	7.77
4/2	252	11	2184	7	0.375	6.5	0.35	7.74
4/4	282	17	1968	2	0.375	6.1	0.40	8.15
4/7	232	24	2380	8	0.375	6.5	0.32	7.72
4/9	264	22	2416	7	0.375	5.6	0.27	7.87
4/11	227	30	2264	3	0.375	6.3	0.29	8.09
4/14	254	45	3144	30	0.375	6.5	0.23	6.84
4/16	268	30	2228	12	0.375	6.0	0.33	7.45
4/18	245	29	2160	10	0.375	5.1	0.26	7.68
4/21	286	30	2208	18	0.375	6.3	0.37	7.02
4/23	216	14	2316	5	0.375	6.5	0.27	7.93
4/25	267	47	2368	11	0.375	6.8	0.36	7.47
4/28	259	21	2708	11	0.375	7.1	0.32	7.54
4/30	293	28	2216	2	0.375	7.2	0.43	8.15
5/2	198	51	2244	1	0.375	6.9	0.27	8.25
5/5	241	29	2212	3	0.375	5.8	0.29	8.11
5/7	269	14	2196	8	0.375	6.4	0.36	7.68
5/9	269	13	1484	2	0.375	6.6	0.55	8.07
5/12	264	7	2032	2	0.375	6.3	0.37	8.16
5/14	223	16	1760	836	0.375	6.3	0.36	0.70
5/16	245	12	1352	254	0.375	6.1	0.27	1.95
5/19	206	10	1435	8	0.375	6.1	0.40	7.42
5/21	302	16	1408	6	0.375	6.2	0.60	7.60
5/23	255	23	1598	5	0.375	7.4	0.55	7.68
N	30	30	30	30	30	30	30	30
$\bar{x}$	252.9	26.3	2101.1	44.0	0.375	6.4	0.37	7.3
σ	41.3	16.99	425.2	153.2	0	0.54	0.10	1.66
C.V.%	16.3	64.6	20.2	348.2	0	8.4	27.9	22.7

TABLE A-27. COD DATA FOR 2 DAY NITROBENZENE UNIT

Chemical Compound: Nitrobenzene

Parameter: COD

θ_c = 2 days

Volume of Reactor = 3.27 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
3/15/80	710	101	236	14	1.5	6.3	8.35	1.67
4/2	552	130	768	7	1.5	6.3	1.99	2.08
4/16	613	85	560	23	1.5	6.4	3.08	3.08
4/28	725	96	676	19	1.5	6.1	2.88	1.92
5/14	738	112	424	20	1.5	6.0	4.61	1.77
N	5	5	5	5	5	5	5	5
$\bar{x}$	667.6	104.8	532.8	16.4	1.5	6.2	4.18	1.85
σ	72.3	15.2	186.9	5.47	0	0.14	2.25	0.14
C.V.%	10.8	14.5	35.1	33.4	0	2.2	53.8	7.6

TABLE A-28. COD DATA FOR 4 DAY NITROBENZENE UNIT

Chemical Compound: Nitrobenzene

Parameter: COD

θ_c = 4 days

Volume of Reactor = 3.07 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
3/15/80	710	53	993	4	0.75	6.6	2.23	3.90
4/2	552	27	1816	28	0.75	6.3	0.89	3.49
4/16	613	27	1652	108	0.75	6.5	1.14	2.33
4/28	725	18	1528	14	0.75	6.3	1.40	3.71
5/14	738	32	1200	9	0.75	6.3	1.80	3.77
N	5	5	5	5	5	5	5	5
$\bar{x}$	667.6	31.4	1437.6	32.6	0.75	6.2	1.49	3.44
σ	72.3	11.72	299.3	38.4	0	0.16	0.48	0.57
C.V.%	10.8	37.3	20.8	117.6	0	2.5	32.0	16.5

TABLE A-29. COD DATA FOR 6 DAY NITROBENZENE UNIT

Chemical Compound: Nitrobenzene θ_c = 6 days

Parameter: COD Volume of Reactor = 3.27 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
3/15/80	710	27	1672	0	0.375	6.1	1.20	8.34
4/2	552	35	2184	7	0.375	6.5	0.76	7.75
4/16	613	31	2228	12	0.375	6.0	0.76	7.76
4/28	725	26	2708	11	0.375	7.1	0.88	7.54
5/14	738	28	1760	836	0.375	6.3	1.21	1.70
N	5	5	5	5	5	5	5	5
$\bar{x}$	667.6	29.2	2110.4	173.2	0.375	6.4	0.96	6.42
σ	72.3	3.2	370.0	329.8	0	0.4	0.20	2.86
C.V.	10.8	10.97	17.5	190.4	0	6.1	21.2	44.5

TABLE A-30. BOD$_5$ DATA FOR 2 DAY DICHLOROPHENOL UNIT

Chemical Compound: Dichlorophenol

Parameter: BOD$_5$

θ_c = 2 days

Volume of Reactor = 3.06 liters

Date	Si mg/l	Se mg/l	X mg/l	X_e mg/l	Fw l/day	F ml/min	F/M	θ_c days
3/17/80	312	3.0	800	8	1.5	6.3	1.16	1.94
3/19	291	4.0	672	4	1.5	6.3	1.28	1.98
3/21	306	3.4	576	24	1.5	6.3	1.58	1.68
3/24	295	3.6	564	22	1.5	6.3	1.55	1.70
3/26	270	8.0	408	92	1.5	6.3	1.96	0.95
3/28	210	10.0	360	32	1.5	6.3	1.73	1.41
3/31	330	3.0	372	104	0	6.3	2.63	1.20
4/2	294	13.2	796	0	1.5	6.3	1.10	2.04
4/4	303	5.4	832	0	1.5	6.3	1.08	2.04
4/7	312	6.4	1048	10	1.5	6.3	0.88	1.94
4/9	264	1.6	1800	1	1.5	6.3	0.43	2.03
4/11	318	3.9	796	8	1.5	6.3	1.18	1.94
4/14	324	4.0	776	0	1.5	6.3	1.24	2.04
4/16	186	4.9	812	8	1.5	6.3	0.68	1.94
4/18	220	0.0	736	8	1.5	6.3	0.89	1.93
4/21	264	6.3	612	7	1.5	6.3	1.28	2.04
4/23	297	3.1	588	3	1.5	6.3	1.50	2.00
4/25	306	5.3	720	4	1.5	6.3	1.26	1.98
4/28	273	0.5	644	4	1.5	6.3	1.26	1.98
4/30	315	2.9	723	10	1.5	6.3	1.29	1.90
5/2	234	0.3	1372	2	1.5	6.3	0.51	2.02
5/6	326	4.8	1594	5	1.5	6.3	0.61	2.00
5/9	330	2.8	1108	22	1.5	6.3	0.88	3.34
5/10	325	2.7	1372	14	1.5	6.3	0.70	1.94
5/12	318	0.8	1656	34	1.5	6.3	0.57	1.87
5/14	366	2.3	1128	12	1.5	6.3	0.96	1.93
5/16	325	5.5	1404	18	1.5	6.3	0.69	1.91
5/19	324	1.0	1520	8	1.5	6.3	0.63	1.98
5/21	313	0.7	1382	2	1.5	6.3	0.67	2.02
5/23	336	1.6	1256	12	1.5	6.3	0.79	1.94
N	30	30	30	30	30	30	30	30
$\bar{x}$	296.2	3.8	947.6	15.9	1.45	6.3	1.10	1.92
σ	39.8	2.87	400.1	23.6	0.27	0	0.47	0.36
C.V.%	13.4	75.5	42.2	148.6	18.5	0	43.1	18.9

TABLE A-31. BOD$_5$ DATA FOR 4 DAY DICHLOROPHENOL UNIT

Chemical Compound: Dichlorophenol — θ_c = 4 days

Parameter: BOD$_5$ — Volume of Reactor = 3.08 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
3/17/80	312	2.4	1336	12	0.75	6.3	0.69	3.73
3/19	291	3.8	1276	1	0.75	6.3	0.67	4.07
3/21	306	3.0	1232	8	0.75	6.3	0.73	3.78
3/24	302	1.2	1240	2	0.75	6.3	0.72	4.03
3/26	290	7.2	1348	5	0.75	6.3	0.63	3.94
3/28	230	1.0	1584	0	0.75	6.3	0.43	4.10
3/31	330	1.8	2572	28	0.75	6.3	0.38	3.66
4/2	294	3.2	2028	3	0.75	6.3	0.43	4.04
4/4	303	3.9	1924	8	0.75	6.3	0.46	3.92
4/7	312	5.2	2726	2	0.75	6.3	0.34	4.07
4/9	264	0.8	2620	1	0.75	6.3	0.30	4.09
4/11	318	3.3	1452	6	0.75	6.3	0.65	3.92
4/14	324	2.0	2072	6	0.75	6.3	0.46	3.98
4/16	186	2.2	2148	6	0.75	6.3	0.26	3.98
4/18	220	0.4	1776	33	0.375	6.3	0.36	5.74
4/21	264	1.8	1604	4	0.75	6.3	0.48	4.00
4/23	297	4.2	1700	8	0.75	6.3	0.51	3.90
4/25	306	2.9	1548	3	0.75	6.3	0.58	4.02
4/28	273	0.7	1322	31	0.75	6.3	0.61	3.25
4/30	315	4.4	1404	8	0.75	6.3	0.66	3.86
5/2	234	16.7	432	18	0.75	6.3	1.60	2.80
5/6	326	4.4	1112	7	0.75	6.3	0.86	3.83
5/8	330	1.8	1228	10	0.75	6.3	0.79	3.76
5/10	325	3.5	1112	0	0.75	6.3	0.86	4.10
5/12	318	0.4	1400	6	0.75	6.3	0.67	3.92
5/14	366	2.2	1476	10	0.75	6.3	0.73	3.82
5/16	325	1.2	1668	134	0.75	6.3	0.57	2.17
5/19	324	5.8	2448	20	0.75	6.3	0.39	3.76
5/21	313	1.8	1772	6	0.75	6.3	0.52	3.95
5/23	336	10.7	1328	28	0.75	6.3	0.75	3.33
N	30	30	30	30	30	30	30	30
$\bar{x}$	297.8	3.5	1629.3	13.8	0.75	6.3	0.59	3.85
σ	38.1	3.26	501.4	24.1	0	0	0.25	0.54
C.V.%	12.8	93.1	30.8	174.4	0	0	42.1	13.9

TABLE A-32. BOD$_5$ DATA FOR 6 DAY DICHLOROPHENOL UNIT

Chemical Compound: Dichlorophenol

Parameter: BOD$_5$

θ_c = 6 days

Volume of Reactor = 3.10 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
3/17/80	312	2.1	1328	16	0.375	6.3	0.69	6.46
3/19	291	2.0	1548	6	0.375	6.3	0.55	7.58
3/21	306	2.4	1432	4	0.375	6.3	0.63	7.76
3/24	300	1.8	1412	0	0.375	6.3	0.62	8.26
3/26	280	2.0	1648	368	0.375	6.3	0.50	1.34
3/28	250	2.0	1492	40	0	6.3	0.49	12.74
3/31	330	1.8	1284	208	0	6.3	0.75	2.10
4/2	294	2.2	1272	8	0.375	6.3	0.68	7.21
4/4	303	3.6	1340	89	0.375	6.3	0.66	3.24
4/7	312	2.6	1470	4	0.375	6.3	0.62	7.77
4/9	264	20.4	1272	72	0	6.3	0.61	6.02
4/11	318	3.3	1060	52	0.20	6.3	0.88	4.87
4/14	324	2.7	1274	34	0.2	6.3	0.74	7.09
4/16	186	2.0	1216	4	0.375	6.3	0.45	7.68
4/18	220	0.6	1300	40	0.2	6.3	0.50	6.55
4/21	264	1.2	1384	3	0.375	6.3	0.56	7.87
4/23	297	2.2	1624	3	0.375	6.3	0.54	7.92
4/25	306	1.0	1720	3	0.375	6.3	0.52	8.15
4/28	273	0.5	1760	23	0.375	6.3	0.45	6.34
4/30	315	3.0	1880	66	0.375	6.3	0.49	4.56
5/2	234	2.2	1672	10	0.375	6.3	0.41	7.26
5/6	326	4.3	1536	64	0.375	6.3	0.62	4.20
5/8	330	6.5	1696	8	0.375	6.3	0.57	7.45
5/10	325	4.8	1628	8	0.375	6.3	0.58	7.42
5/12	318	1.1	1948	8	0.375	6.3	0.48	7.54
5/14	366	8.0	2132	54	0.375	6.3	0.50	5.20
5/16	325	10.0	2080	66	0.375	6.3	0.46	4.76
5/19	324	11.2	2872	102	0.20	6.3	0.33	4.53
5/21	313	4.8	3644	34	0.375	6.3	0.25	6.79
5/23	336	2.6	3120	22	0.375	6.3	0.32	7.10
N	30	30	30	30	30	30	30	30
$\bar{x}$	298.1	3.8	1701.5	47.6	0.31	6.3	0.55	6.46
σ	37.3	3.98	569.9	72.9	0.12	0	0.13	2.12
C.V.%	12.5	104.6	33.5	1531.1	38.6	0	23.9	32.9

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TABLE A-33. TOC DATA FOR 2 DAY DICHLOROPHENOL UNIT

Chemical Compound: Dichlorophenol θ_c = 2 days

Parameter: TOC Volume of Reactor = 3.06 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
3/17/80	201	28.2	800	8	1.5	6.3	0.74	1.942
3/19	188	19	672	4	1.5	6.3	0.83	1.993
3/21	151	44	576	24	1.5	6.3	0.73	1.68
3/24	213	24.5	564	22	1.5	6.3	1.12	1.704
3/26	216	14.7	408	92	1.5	6.3	1.57	0.954
3/28	214	52	360	32	1.5	6.3	1.76	1.408
4/2	236	46.1	796	0	1.5	6.3	0.88	2.09
4/4	228	41	1924	0	1.5	6.3	0.35	2.04
4/7	217	34.5	1048	10	1.5	6.3	0.61	1.94
4/9	198	23.0	1800	1	1.5	6.3	0.33	2.03
4/11	197	28.5	796	8	1.5	6.3	0.73	1.94
4/14	199	39.0	776	0	1.5	6.3	0.76	2.04
4/16	215	33.3	812	8	1.5	6.3	0.79	1.93
4/18	197	18	736	8	1.5	6.3	0.79	1.93
4/21	229	25	612	7	1.5	6.3	1.11	1.92
4/23	167	14.3	588	3	1.5	6.3	0.85	1.98
4/25	211	18	720	4	1.5	6.3	0.87	1.98
4/28	273	8.1	644	4	1.5	6.3	1.26	1.97
4/30	315	0.5	723	10	1.5	6.3	1.29	1.90
5/2	234	12	1372	2	1.5	6.3	0.51	2.02
5/6	230	13	1594	5	1.5	6.3	0.43	2.00
5/8	223	15	1108	22	1.5	6.3	0.60	1.85
5/10	222	8.5	1372	14	1.5	6.3	0.48	1.94
5/12	318	9	1656	34	1.5	6.3	0.57	1.85
5/14	366	18	1128	12	1.5	6.3	0.96	1.94
5/16	325	19	1404	18	1.5	6.3	0.69	1.91
5/19	245	19	1520	8	1.5	6.3	0.48	1.98
5/21	233	17	1382	2	1.5	6.3	0.50	2.02
5/23	212	15	1256	12	1.5	6.3	0.50	1.94
N	29	29	29	29	29		29	29
$\bar{x}$	230.2	22.7	967.4	12.9	1.5	6.3	0.80	1.89
σ	46.6	12.4	392.5	17.4	0	0	0.34	0.22
C.V.%	20.3	54.6	40.6	134.9	0	0	42.8	11.6

TABLE A-34. TOC DATA FOR 4 DAY DICHLOROPHENOL UNIT

Chemical Compound: Dichlorophenol

Parameter: TOC

θ_c = 4 days

Volume of Reactor = 3.08 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
3/17/80	201	25.8	1336	12	0.75	6.3	0.44	3.73
3/19	188	7	1276	1	0.75	6.3	0.43	4.07
3/21	151	31	1232	8	0.75	6.3	0.36	3.83
3/24	213	15.6	1240	2	0.75	6.3	0.51	4.03
3/26	216	18.1	1348	5	0.75	6.3	0.47	3.94
3/28	214	7.5	1584	0	0.75	6.3	0.40	4.10
3/31	338	23	2572	28	0.75	6.3	0.39	3.66
4/2	236	24.4	2028	3	0.75	6.3	0.34	4.04
4/4	228	18	1924	8	0.75	6.3	0.35	3.92
4/7	217	33	2726	2	0.75	6.3	0.23	4.07
4/9	198	26.8	2620	1	0.75	6.3	0.22	4.08
4/11	197	21.0	1452	6	0.75	6.3	0.40	3.93
4/14	199	33.5	2072	6	0.75	6.3	0.28	3.97
4/16	215	32.4	2148	6	0.75	6.3	0.38	3.98
4/18	197	18	1776	33	0.75	6.3	0.33	3.40
4/21	229	23	1604	4	0.75	6.3	0.42	3.99
4/23	167	14.2	1700	8	0.75	6.3	0.29	3.90
4/25	211	23.4	1548	3	0.75	6.3	0.40	4.02
4/28	273	10.9	1312	31	0.75	6.3	0.61	3.25
4/30	315	4.5	1404	8	0.75	6.3	0.66	3.86
5/2	234	59	432	18	0.75	6.3	1.60	2.81
5/6	230	14	1112	7	0.75	6.3	0.61	3.83
5/8	223	7	1228	10	0.75	6.3	0.53	3.76
5/10	222	14	1112	0	0.75	6.3	0.59	4.10
5/12	318	10	1400	6	0.75	6.3	0.67	3.92
5/14	366	16	1476	10	0.75	6.3	0.73	3.82
5/16	325	14	1668	134	0.75	6.3	0.57	2.17
5/19	245	25	2448	20	0.75	6.3	0.29	3.76
5/21	233	16	1772	6	0.75	6.3	0.39	3.95
5/23	212	20	1328	28	0.75	6.3	0.47	3.32
N	30	30	30	30	30	30	30	30
$\bar{x}$	233.8	20.2	1629.3	13.8	0.75	6.3	0.48	3.77
σ	49.7	10.6	501.4	24.1	0	0	0.25	0.41
C.V.%	21.3	52.7	30.8	174.4	0	0	51.2	10.9

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TABLE A-35. TOC DATA FOR 6 DAY DICHLOROPHENOL UNIT

Chemical Compound: Dichlorophenol — θ_c = 6 days

Parameter: TOC — Volume of Reactor = 3.10 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
3/17/80	201	21.9	1328	16	0.375	6.3	0.44	6.46
3/19	188	25	1548	6	0.375	6.3	0.36	7.54
3/21	151	39	1432	4	0.375	6.3	0.31	7.76
3/24	213	22.4	1412	0	0.375	6.3	0.44	8.26
3/26	216	11.1	1648	368	0.375	6.3	0.38	1.33
3/28	214	20	1492	40	0	6.3	0.42	12.79
3/31	338	30	1284	208	0	6.3	0.77	2.11
4/2	236	24.3	1272	8	0.375	6.3	0.54	7.21
4/4	228	23	1340	89	0.375	6.3	0.50	3.25
4/7	217	28.5	1470	4	0.375	6.3	0.43	7.78
4/9	198	25.7	1272	72	0	6.3	0.46	60.4
4/11	197	24.3	1060	52	0.2	6.3	0.54	4.88
4/14	199	39.3	1274	34	0.2	6.3	0.46	7.09
4/16	215	27.9	1216	4	0.375	6.3	0.52	7.68
4/18	197	18	1300	40	0.20	6.3	0.44	6.55
4/21	229	20	1384	3	0.375	6.3	0.48	7.87
4/23	167	16.5	1624	3	0.375	6.3	0.30	7.93
4/25	211	13.5	1720	3	0.375	6.3	0.36	7.94
4/28	273	7.5	1760	23	0.375	6.3	0.45	6.34
4/30	315	4	1880	66	0.375	6.3	0.49	4.4
5/2	234	20	1672	10	0.375	6.3	0.41	7.26
5/6	230	13	1536	64	0.375	6.3	0.44	4.20
5/8	223	11	1696	8	0.375	6.3	0.38	3.92
5/10	222	11.5	1628	8	0.375	6.3	0.40	7.42
5/12	318	11	1948	8	0.375	6.3	0.48	7.55
5/14	366	29	2132	54	0.375	6.3	0.50	5.20
5/16	325	38.8	2080	66	0.375	6.3	0.46	4.76
5/19	245	32.5	2872	102	0.20	6.3	0.25	6.01
5/21	233	16	3644	34	0.375	6.3	0.19	6.79
5/23	212	18	3120	32	0.375	6.3	0.20	6.68
N	30	30	30	30	30	6.3	30	30
$\bar{x}$	233.8	21.4	1701.5	47.6	0.31	6.3	0.43	6.37
σ	49.7	9.03	569.9	72.9	0.12	0	0.11	2.1
C.V.%	21.3	42.2	33.5	153.1	38.6	0	25.5	33.5

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TABLE A-36. COD DATA FOR 2 DAY DICHLOROPHENOL UNIT

Chemical Compound: Dichlorophenol
Parameter: COD

θ_c = 2 days
Volume of Reactor = 3.06 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
3/17/80	515	35	800	8	1.5	6.3	1.92	1.94
4/2	586.3	107.3	796	0	1.5	6.3	2.19	2.04
4/16	551	35	812	8	1.5	6.3	2.02	1.94
4/30	593.9	45.1	723	10	1.5	6.3	2.43	1.91
5/14	614	20.1	1127	12	1.5	6.3	1.61	1.94
N	5	5	5	5	5	5	5	5
$\bar{x}$	572.0	48.5	851.8	7.6	1.5	6.3	2.03	1.95
σ	34.86	30.3	140.9	4.06	0	6.3	0.27	0.04
C.V.%	6.1	62.5	16.5	53.4	0	6.3	13.5	2.3

TABLE A-37. COD DATA FOR 4 DAY DICHLOROPHENOL UNIT

Chemical Compound: Dichlorophenol
Parameter: COD

θ_c = 4 days
Volume of Reactor = 3.08 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
3/17	515	27	1336	12	0.75	6.3	1.14	3.73
4/2	586.3	103.4	2028	3	0.75	6.3	0.73	4.04
4/16	551	16	2148	6	0.75	6.3	0.75	3.98
4/30	593.9	45.1	1404	8	0.75	6.3	1.25	3.86
5/4	614	32.1	1476	10	0.75	6.3	1.22	3.82
N	5	5	5	5	5	5	5	5
$\bar{x}$	572.0	44.7	1678.4	7.8	0.75	6.3	1.02	3.89
σ	34.86	30.6	337.8	3.11	0	6.3	0.23	0.11
C.V.%	6.1	68.6	20.1	39.9	0	6.3	22.5	2.9

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TABLE A-38. COD DATA FOR 6 DAY DICHLOROPHENOL UNIT

Chemical Compound: Dichlorophenol θ_c = 6 days

Parameter: COD Volume of Reactor = 3.10 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
3/17/80	515	29	1328	16	0.375	6.3	1.14	6.46
4/2	586.3	61.3	1272	8	0.375	6.3	1.35	7.21
4/16	551	50	1216	4	0.375	6.3	1.32	7.68
4/30	593.9	33.3	1880	66	0.375	6.3	0.92	4.56
5/14	614	96.1	2132	54	0.2	6.3	0.85	7.30
N	5	5	5	5	5	5	5	5
$\bar{x}$	572.0	53.9	1565.6	29.6	0.34	6.3	1.12	6.64
σ	34.86	23.9	368.2	25.3	0.07	0	0.20	1.11
C.V.%	6.1	44.4	23.5	85.4	20.5	0	18.1	16.7

TABLE A-39. BOD_5 DATA FOR 2 DAY DICHOROPHENOL, NITROBENZENE AND TETRACHLOROETHANE COMBINED UNIT

Chemical Compound: Combined - Dichlorophenol, Nitrobenzene, Tetrachloroethane θ_c = 2 days
Parameter: BOD_5
Volume of Reactor = 3.1 liters

Date	Si mg/1	Se mg/1	X mg/1	Xe mg/1	Fw 1/day	F ml/min	F/M	θ_c days
3/17/80	307	16	531	65	0	6.2	1.64	2.90
3/7/19	375	8	591	67	0	6.2	1.80	3.11
3/21	330	8	427	58	0	6.2	2.19	2.59
3/24	353	16	942	45	0	6.2	1.06	7.38
3/26	219	15	791	34	0.97	6.2		2.40
3/28	330	0	982	43	0	6.2	0.97	2.76
3/31	320	11	522	152	0	6.2	1.77	1.17
4/2	300	15	182	18	0	6.2	4.75	3.45
4/4	340	6	628	149	--	6.2	1.56	1.44
4/7	300	12	938	42	1.0	6.2	0.94	2.25
4/9	340	4	847	92	--	6.2	1.18	3.15
4/11	300	5	822	105	--	6.2	1.07	2.67
4/14	320	17	302	39	--	6.2	3.10	2.65
4/16	369	18	525	171	--	6.2	2.05	1.05
4/18	279	13	730	111	--	6.2	1.12	2.25
4/21	235	5	588	132	--	6.2	1.67	1.52
4/25	265	1	784	75	--	6.2	0.99	3.57
4/3	308	3.5	1204	141	--	6.2	0.75	2.92
5/2	270	5.5	280	424	--	6.2	1.96	0.23
5/5	108	1.6	820	29	0.90	6.2	--	2.57
5/7	379	2.0	780	12	0.90	6.2	1.40	2.98
5/9	293	5.0	940	32	0.90	6.2	0.90	2.60
5.12	366	3.2	1010	92	1.0	6.2	1.04	1.77
5/14	311	6.7	1220	0	1.0	6.2	0.73	3.05
5/16	333	2.3	1450	0	1.2	6.2	0.66	2.54
5/19	376	3.8	2200	28	1.5	6.2	0.35	6.86
5/21	455	2.0	2210	20	1.5	6.2	0.59	1.94
5/23	354	2.3	1830	16	1.5	6.2	0.56	1.95
N	28	28	28	28	28	28	27	28
$\bar{x}$	314.10	7.51	909.3	82.7	0.67	6.2	1.39	2.52
σ	61.05	5.47	497.16	83.98	1.15	0	0.89	1.18
C.V.%	19.4	72.8	54.67	101.5	171.8	0	64.1	46.97

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TABLE A-40. BOD$_5$ DATA FOR 4 DAY DICHLOROPHENOL, NITROBENZENE AND TETRACHLOROETHANE COMBINED UNIT

Chemical Compound: Combined - Dichlorphenol, Nitrobenzene, Tetrachloroethane

θ_c = 4 days

Volume of Reactor = 3.15 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
3/17/80	307	0	913	35	0.765	6.2	0.95	2.92
3/19	375	3.5	1193	15	0.62	6.2	0.89	4.34
3/21	330	4.5	1098	12	0.62	6.2	0.85	4.43
3/24	353	5	1377	9	0.75	6.2	0.73	3.92
3/26	219	5	1540	17	0.75	6.2	0.40	3.75
3/28	330	6.2	1102	15	0.62	6.2	0.85	4.10
3/31	320	3	1192	42	0.75	6.2	0.76	2.86
4/2	300	1.75	529	244	--	6.2	1.61	0.74
4/4	340	8.4	642	158	--	6.2	1.50	1.38
4/7	300	5	492	58	--	6.2	1.79	2.90
4/9	340	8	435	62	--	6.2	2.29	2.40
4/11	300	7.2	540	72	--	6.2	1.63	2.56
4/14	320	10	503	97	--	6.2	1.86	1.77
4/16	369	8.0	564	115	--	6.2	1.91	1.68
4/17	279	5.5	848	173	--	6.2	0.96	1.67
4/21	235	1	648	114	--	6.2	1.07	1.94
4/25	265	3.1	720	495	--	6.2	0.94	4.97
4/28	308	3.5	1174	480	0.40	6.2	0.76	0.78
4/30	275	2.7	1029	70	0.40	6.2	0.76	7.22
5/2	270	3.2	160	320	--	6.2	4.78	0.17
5/5	108	3.6	1150	72	--	6.2	0.27	5.45
5/7	378	1.9	1140	32	--	6.2	0.94	12.17
5/9	293	3.5	940	32	0.50	6.2	0.88	3.87
5/12	366	1.0	1160	10	0.50	6.2	0.89	6.10
5/14	311	1.5	940	36	0.50	6.2	0.94	3.70
5/16	333	2.6	1000	0	0.50	6.2	0.94	6.10
5/21	455	2.7	2280	20	0.75	6.2	0.57	3.71
5/23	354	3.6	1190	24	0.75	6.2	0.84	3.33
N	28	28	28	28	28	29	28	28
$\bar{x}$	315.5	4.10	946.8	69.70	0.33	6.2	1.19	3.60
σ	61.78	2.40	407.5	73.5	0.32	0	0.84	2.36
C.V.%	19.58	59.4	43.0	105.5	96.7	0	70.4	65.7

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TABLE A-41. BOD_5 DATA FOR 6 DAY DICHLOROPHENOL, NITROBENZENE AND TETRACHLOROETHANE COMBINED UNIT

Chemical Compound: Combined - Dichlorophenol, Nitrobenzene, Tetrachloroethane θ_c = 6 days

Parameter: BOD_5 Volume of Reactor = 2.97 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
3/17/80	307	0	2068	0	0.35	6.2	0.45	2.90
3/19	375	0.1	2303	0	0.375	6.2	0.49	7.92
3/21	330	2.0	2561	0	0.375	6.2	0.39	7.92
3/24	353	4.8	2664	27.0	0.375	6.2	0.40	6.43
3/26	219	5.4	2564	37.5	0.375	6.2	0.26	5.94
3/28	330	6.0	2440	154	0	6.2	0.41	5.27
3/31	320	4.5	1641	461	0	6.1	0.59	1.20
4/2	300	3.7	1100	168	0	6.2	0.82	2.18
4/4	340	3.5	1648	78	0	6.2	0.62	7.03
4/7	300	4.2	1581	89	0	6.2	0.58	5.91
4/9	340	3.5	1565	162	0	6.2	0.65	3.21
4/11	300	4.0	1602	248	0	6.2	0.56	2.15
4/14	320	8.1	520	148	0	6.2	1.84	1.67
4/16	369	9.3	570	217	0	6.2	1.94	0.87
4/18	279	7.0	733	249	0	6.2	1.14	0.98
4/21	235	2	924	293	0	6.2	0.76	1.05
4/25	265	2.3	330	155	0	6.2	2.42	0.71
4/28	308	4.1	481	171	0	6.2	1.93	0.94
4/30	275	2.5	546	168	0	6.2	1.51	2.84
5/2	270	2.9	690	52	0	6.2	0.82	4.41
5/5	108	4.0	720	31	0	6.2	0.45	7.72
5/7	378	2.0	770	28	0	6.2	1.48	9.14
5/9	293	8.0	1270	12	0.35	6.2	0.69	6.89
5/12	366	1.5	1560	0	0.375	6.2	0.71	7.92
5/14	311	4.0	1520	8	0.375	6.2	0.62	7.07
5/16	333	2.9	1560	0	0.375	6.2	0.64	7.92
5/21	455	4.3	3140	36	0.375	6.2	0.44	6.27
5/23	354	7.6	2300	72	0.375	6.2	0.46	4.62
N	28	28	28	28	28	28	28	28
$\bar{x}$	314.1	4.43	1549.3	106.5	0.15	6.2	0.85	4.88
σ	62	2.35	850.9	109.5	0.18	0	0.57	2.83
C.V.%	101.8	53.10	54.9	102.8	120.8	0	66.9	57.0

TABLE A-42. TOC DATA FOR 2 DAY DICHLOROPHENOL, NITROBENZENE AND TETRACHLOROETHANE COMBINED UNIT

Chemical Compound: Combined - Dichlorophenol, Nitrobenzene, Tetrachloroethane θ_c = 2 days

Parameter: TOC Volume of Reactor = 3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
3/17/80	237	36	531	65	0	6.2	1.31	2.79
3/19	192	24	591	67	0	6.2	.95	3.01
3/21	152	74	427	58	0	6.2	1.04	2.52
3/24	154	60	942	45	0	6.2	0.46	7.38
3/26	186	99	791	34	97	6.2	0.69	2.32
3/28	654	53	982	43	1.0	6.2	1.94	1.19
3/31	356	68	522	152	0	6.1	1.96	1.19
4/2	207	42	182	18	0	6.2	3.32	3.45
4/4	307	62	628	149	0	6.2	1.42	1.44
4/7	230	45	938	42	1.0	6.2	0.72	2.25
4/9	200	52	847	92	0	6.2	0.69	3.15
4/11	190	56	822	105		6.2	0.68	2.67
4/14	225	90	302	39	0	6.2	2.17	2.65
4/16	250	66	525	171	0	6.2	1.40	1.05
4/18	212	51	730	111	0	6.2	0.85	2.25
4/21	258	47	588	132	0	6.2	1.28	1.52
4/25	243	71	784	75	0	6.2	0.90	3.57
4/28	239	26	1204	141	0	6.2	0.58	2.92
4/30	223	41	1294	205	0	6.2	0.50	2.16
5/2	204	25	280	424	0	6.2	2.13	0.23
5/5	212	27	820	29	0.9	6.2	0.76	2.58
5/7	278	27	780	12	0.9	6.2	1.04	2.98
5/9	253	19	940	32	0.9	6.2	0.79	2.60
5/12	246	9	1010	92	1.0	6.2	0.72	1.77
5/14	229	25	1220	0	1.0	6.2	0.55	3.05
5/16	206	25	1450	0	1.2	6.2	0.42	2.54
5/19	268	24	2200	28	1.5	6.2	0.36	1.91
5/21	284	17	2210	20	1.5	6.2	0.37	1.95
5/23	248	14	1830	16	1.5	6.2	0.40	1.95
N	29	29	29	29	29	29	29	29
$\bar{x}$	246.3	44.1	909.3	82.7	0.67	6.2	1.05	2.49
σ	87.5	22.8	496.8	83.98	1.15	0.02	0.68	1.18
C.V.%	35.5	51.7	54.6	101.5	171.8	0.29	64.5	47.2

TABLE A-43. TOC DATA FOR DAY DICHLOROPHENOL, NITROBENZENE AND TETRACHLOROETHANE COMBINED UNIT

Chemical Compound: Combined - Dichlorophenol, Nitrobenzene, Tetrachloroethane θ_c = 4 days

Parameter: TOC Volume of Reactor = 3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
3/17/80	237	32	913	35	0.765	6.2	0.76	2.83
3/19	192	39	1193	15	0.62	6.2	0.48	4.21
3/21	152	64	1098	12	0.62	6.2	0.40	4.29
3/24	154	29	1377		0.75	6.2	0.33	3.80
3/26	186	17	1500	17	0.75	6.2	0.36	3.62
3/28	654	45	1102	15	0.62	6.2	1.74	4.16
3/31	356	26	1192	142	0.75	6.2	0.88	2.94
4/2	207	16	529	244	0.75	6.2	1.30	1.50
4/4	307	29	692	158	0.75	6.2	1.30	1.50
4/7	230	30	492	58	1.0	6.2	1.37	2.90
4/9	200	53	435	62	0	6.2	1.34	2.40
4/11	190	29	540	72	0	6.2	1.04	2.56
4/14	225	56	503	97	0	6.2	1.31	1.77
4/16	250	43	564	115	0	6.2	1.30	1.68
4/18	212	36	848	173	0	6.2	0.73	1.67
4/21	258	40	648	114	0	6.2	1.16	1.94
4/25	243	25	720	49	0	6.2	0.99	4.97
4/28	239	29	1174	48	0.4	6.2	0.59	4.07
4/30	223	33	1029	70	0.4	6.2	0.63	3.11
5/2	204	18	160	320	0	6.2	3.73	0.17
5/5	212	23	1150	72	0	6.2	0.53	5.46
5/7	278	14	1140	32	0	6.2	0.72	12.17
5/9	253	25	940	32	0.5	6.2	0.79	3.88
5/12	246	10	1160	10	0.5	6.2	0.62	5.33
5/14	229	24	940	36	0.5	6.2	0.72	3.71
5/16	206	32	1000	0	0.5	6.2	0.60	6.10
5/21	284	18	2280	20	0.75	6.2	0.36	3.71
5/23	248	17	1190	24	0.75	6.2	0.60	3.33
N	28	28	28	28	28	28	28	28
$\bar{x}$	245.5	30.4	946.8	69.7	0.33	6.2	0.95	3.54
σ	88.9	12.8	407.5	73.5	0.32	0	0.65	2.16
C.V.%	36.2	42.2	43.0	105.5	96.7	0	68.4	61.1

TABLE A-44. TOC DATA FOR 6 DAY DICHLOROPHENOL, NITROBENZENE AND TETRACHLOROETHANE COMBINED UNIT

Chemical Compound: Combined - Dichlorophenol, Nitrobenzene, Tetrachloroethane θ_c = 6 days

Parameter: TOC Volume of Reactor = 2.97 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
3/17/80	237	48	2068	0	0.35	6.2	0.50	8.49
3/19	192	57	2303	0	0.375	6.2	0.25	7.92
3/21	152	42	2561	0	0.375	6.2	0.17	7.92
3/24	154	7.4	2664	27	0.375	6.2	0.17	6.43
3/26	286	8.4	2564	38	0.375	6.2	0.15	5.94
3/28	654	40	2440	154	0.375	6.2	0.80	5.27
3/31	356	19	1641	461	0	6.2	0.65	1.18
4/2	207	14	1100	168	0	6.2	0.56	2.18
4/4	307	23	1648	78	0	6.2	0.56	7.03
4/7	230	28	1581	89	0	6.2	0.43	5.91
4/9	200	22	1565	162	0	6.2	0.39	3.21
4/11	190	30	1602	248	0	6.2	0.36	2.15
4/14	225	57	520	148	0	6.2	1.30	1.17
4/16	250	40	570	217	0	6.2	1.32	0.87
4/18	212	29	733	249	0	6.2	0.86	0.98
4/21	258	33	924	293	0	6.2	0.83	1.05
4/25	243	27	330	155	0	6.2	2.22	0.71
4/28	239	36	481	171	0	6.2	1.50	0.94
4/30	223	40	546	168	0	6.2	1.22	1.08
5/2	204	16	690	52	0	6.2	0.89	4.41
5/5	212	25	720	31	0	6.2	0.88	7.73
5/7	278	16	770	28	0	6.2	0.06	9.15
5/9	253	21	1270	12	0.35	6.2	0.60	6.89
5/12	246	11	1560	0	0.375	6.2	0.48	7.92
5/14	229	16	1520	8	0.35	6.2	0.45	7.52
5/16	206	27	1560	0	0.375	6.2	0.40	7.92
5/19	268	22	3560	24	0.375	6.2	0.27	6.28
5/23	248	19	2300	72	0.375	6.2	0.33	4.62
N	28	28	28	28	28	28	28	28
$\bar{x}$	246.3	27.2	1549.3	106.5	0.15	6.2	0.66	4.8
σ	87.5	13.0	850.9	109.5	0.18	0	0.48	2.88
C.V.%	35.5	47.8	54.9	102.8	120.8	0	72.6	59.9

TABLE A-45. COD DATA FOR 2 DAY DICHLOROPHENOL, NITROBENZENE AND TETRACHLOROETHANE COMBINED UNIT

Chemical Compound: Combined - Dichlorophenol, Nitrobenzene, Tetrachloroethane

θ_c = 2 days

Parameter: COD

Volume of Reactor = 3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
3/19/80	562	109	591	67	0	6.2	2.78	3.01
4/2	517	115	182	18	0	6.2	8.32	3.45
4/16	598	101	525	171	0	6.2	3.34	1.05
4/30	586	33	1297	205	0	6.2	1.32	2.16
5/14	606	72	1220	0	1.0	6.2	1.45	3.05
N	5	5	5	5	2	5	5	5
$\bar{x}$	573.8	86.1	763.0	92.2	0.5	6.2	3.44	2.54
σ	31.9	30.1	426.3	81.5	0.5	0	2.56	0.85
C.V.%	5.6	34.9	55.9	8.8	100.0	0	74.4	33.6

TABLE A-46. COD DATA FOR 4 DAY DICHLOROPHENOL, NITROBENZENE AND TETRACHLOROETHANE COMBINED UNIT

Chemical Compound: Combined - Dichlorophenol, Nitrobenzene, Tetrachloroethane

θ_c = 4 days

Parameter: COD

Volume of Reactor = 3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
3/19/80	562	74	1193	15	0.62	6.2	1.38	4.21
4/2	517	23	529	244	0	6.2	2.87	0.74
4/16	598	50	564	115	0	6.2	3.11	1.68
4/30	586	33	1029	70	0.6	6.2	1.67	3.11
5/14	606	44	940	36	0.5	6.2	1.89	3.71
N	5	5	5	5	3	5	5	5
$\bar{x}$	573.8	44.86	851.0	96.0	0.51	6.2	2.18	2.69
σ	31.9	17.2	260.5	80.96	0.09	0	0.68	1.29
C.V.%	5.6	38.3	30.6	84.3	17.7	0	31.3	48.8

TABLE A-47. COD DATA FOR 6 DAY DICHLOROPHENOL, NITROBENZENE AND TETRACHLOROETHANE COMBINED UNIT

Chemical Compound: Combined - Dichlorophenol, Nitrobenzene, Tetrachloroethane θ_c = 6 days

Parameter COD

Volume of Reactor = 2.97 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
3/19	562	27	2303	0	0.375	6.2	0.73	7.92
4/2	517	23	1100	168	0	6.2	0.68	1.60
4/16	598	35	570	217	0	6.2	3.15	0.87
4/30	586	33	546	168	0	6.2	3.23	1.08
5/14	606	16	1520	8	0.375	6.2	1.20	7.07
N	5	5	5	5	2	5	5	5
$\bar{x}$	573.8	26.9	1207.8	112.2	0.375	6.2	1.80	3.7
σ	31.9	6.9	653.0	89.7	0	0	1.15	3.10
C.V.%	5.6	25.7	54.1	80.0	0	0	63.9	83.7

TABLE A-48. BOD_5 DATA FOR 2 DAY ACRYLONITRILE UNIT

Chemical Compound: Acrylonitrile — θ_c = 2 days

Parameter: BOD_5 — Volume of Reactor = 3.13 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	F_w l/day	F ml/min	F/M	θ_c days
6/30	120	5.8	440	4	1.50	6.1	0.77	2.03
7/2	222	9.2	690	8	1.50	6.0	0.89	2.02
7/3	175	3.7	680	54	1.50	6.4	0.76	1.66
7/7	82	2.8	680	32	1.25	6.4	0.36	2.10
7/9	82	5.5	560	46	1.35	5.5	0.37	1.85
7/11	320	5.7	680	50	1.50	6.1	1.32	1.70
7/14	142	7.3	480	72	1.25	6.4	0.87	1.55
7/16	288	4.1	550	48	1.25	6.0	1.45	1.88
7/18	288	8.5	500	70	1.05	6.5	1.72	1.73
7/21	282	4.1	570	62	1.50	6.3	1.43	1.55
7/23	203	2.5	590	124	1.35	5.8	0.92	1.37
7/25	141	4.8	600	128	1.50	6.2	0.67	1.25
7/28	148	5.2	660	26	1.00	6.5	0.67	2.57
7/30	236	5.2	820	8	1.46	6.5	0.86	2.07
8/1	100	2.5	688	12	1.50	6.1	0.41	1.98
8/4	119	1.9	1280	8	1.40	6.3	0.27	2.19
8/6	150	2.3	1320	10	1.50	6.1	0.32	2.04
8/8	157	2.7	550	16	1.20	6.4	0.84	2.32
8/11	72	4.1	730	12	1.5	6.0	0.27	1.99
8/13	210	4.5	620	34	0.75	6.2	0.97	2.98
8/15	186	3.5	1010	42	1.3	5.8	0.49	2.10
8/18	300	7.0	650	42	1.2	5.3	1.12	2.14
8/20	232	4.5	580	16	1.20	7.1	1.31	2.30
8/22	330	2.7	580	24	1.20	5.8	1.52	2.25
8/28	270	9.5	610	10	1.2	6.0	1.22	2.45
8/29	148	4.9	192	16	1.2	5.5	1.97	2.00
N	26	26	26	26	26	26	26	26
$\bar{x}$	192.4	6.6	665.8	37.46	1.31	6.13	0.92	2.00
σ	77.0	6.2	229.3	32.5	0.19	0.37	0.46	0.37
C.V.%	40.0	93.8	34.4	86.8	14.4	6.0	50.2	18.4

TABLE A-49. BOD_5 DATA FOR 4 DAY ACRYLONITRILE UNIT

Chemical Compound: Acrylonitrile

θ_c = 4 days

Parameter: BOD_5

Volume of Reactor = 3.14 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
6/30/80	120	1.7	1150	8	0.65	6.2	0.23	5.81
7/2	222	5.7	1270	6	0.75	6.0	0.48	4.05
7/3	175	6.7	1200	138	0.60	6.0	0.40	2.57
7/7	82	1.6	1390	0	0.70	6.4	0.17	4.49
7/9	82	1.8	1460	8	0.75	5.7	0.15	4.04
7/11	320	4.9	1610	10	0.75	6.2	0.57	4.01
7/14	142	8.7	1350	18	0.60	6.0	0.29	4.67
7/16	288	2.9	1410	10	0.75	7.3	0.68	3.94
7/18	288	5.3	1210	0	0.70	6.5	0.71	4.49
7/21	282	4.5	1550	6	0.75	6.0	0.50	4.08
7/23	203	2.7	1450	8	0.75	6.0	0.39	4.03
7/25	141	2.8	1350	4	0.75	6.2	0.30	4.10
7/28	148	6.9	930	18	0.75	5.6	0.41	3.72
7/30	236	2.8	1270	2	0.75	6.5	0.55	4.14
8/1	100	2.0	1212	10	0.75	6.2	0.23	3.95
8/4	119	1.7	1200	8	0.75	6.4	0.29	3.99
8/6	150	1.1	1210	8	0.75	6.1	0.35	4.00
8/8	157	4.8	1240	10	0.75	6.2	0.36	3.95
8/11	72	1.9	1360	18	0.75	6.2	0.15	3.82
8/13	210	3.7	1240	10	0.75	6.2	0.48	3.95
8/15	186	4.7	1410	8	0.75	6.2	0.38	4.02
8/18	300	2.4	1520	20	0.75	6.4	0.58	3.81
8/20	232	3.1	1224	6	0.75	6.0	0.52	4.05
8/22	330	4.6	1450	8	0.75	6.1	0.64	4.03
8/28	270	4.5	1520	4	0.75	6.4	0.52	4.11
8/29	148	1.3	972	0	0.75	6.6	0.46	4.19
N	26	26	26	26	26	26	26	26
$\bar{x}$	192.4	3.65	1313.8	12.9	0.73	6.2	0.42	4.08
σ	77.0	1.92	162.9	25.5	0.04	0.31	0.16	0.49
C.V.%	40.0	52.6	12.4	197.6	6.0	5.1	37.4	12.1

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A-50. BOD_5 DATA FOR 6 DAY ACRYLONITRILE UNIT

Chemical Compound: Acrylonitrile

Parameter: BOD_5

θ_c = 6 days

Volume of Reactor = 3.04 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
6/30/80	120	2.8	1580	36	0.40	6.5	0.23	5.64
7/2	222	7.3	1560	34	0.30	6.2	0.42	7.09
7/3	175	10.8	1670	38	0.30	6.4	0.31	7.00
7/7	82	.7	1390	190	0	6.4	0.17	3.59
7/9	82	2.6	1620	84	0.20	5.8	0.14	6.20
7/11	320	>10	1420	20	0.40	6.6	0.70	6.24
7/14	142	9.7	2330	16	0.40	6.4	0.18	6.89
7/16	288	1.1	1610	6	0.45	6.3	0.53	6.44
7/18	288	2.9	1310	6	0.50	6.4	0.67	5.77
7/21	282	2.9	1460	10	0.45	6.1	0.56	6.22
7/23	203	3.0	1620	14	0.45	6.1	0.36	6.09
7/25	141	3.4	1470	22	0.45	6.3	0.29	5.66
7/28	148	3.9	1450	180	0.15	6.2	0.30	3.37
7/30	236	1.9	880	82	0.39	6.25	0.79	3.25
8/1	100	2.1	1056	14	0.30	6.0	0.27	8.09
8/4	119	6.1	1200	12	0.48	6.3	0.30	5.65
8/6	150	2.0	1060	18	0.45	6.1	0.41	5.57
8/8	157	3.7	1220	6	0.47	6.3	0.37	6.10
8/11	72	2.1	1570	6	0.45	6.0	0.13	6.45
8/13	210	1.2	1690	8	0.45	6.3	0.37	6.36
8/15	186	6.9	2170	2	0.40	6.1	0.25	7.50
8/18	300	3.5	1770	8	0.50	6.1	0.49	5.79
8/20	232	1.8	1780	0	0.50	6.1	0.38	6.08
8/22	330	6.0	1600	8	0.40	6.7	0.65	7.05
8/28	270	3.9	1710	6	0.45	6.4	0.48	6.46
8/29	148	1.6	1580	0	0.45	6.3	0.28	6.76
N	26	26	26	26	26	26	26	26
$\bar{x}$	192.4	4.0	1529.9	31.8	0.39	6.26	0.39	6.05
σ	77.0	2.79	306.8	48.96	0.12	0.19	0.18	1.13
C.V.%	40.0	69.9	20.1	154.0	29.9	3.10	44.9	18.6

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TABLE A-51. TOC DATA FOR 2 DAY ACRYLONITRILE UNIT

Chemical Compound: Acrylonitrile

θ_c = 2 days

Parameter: TOC

Volume of Reactor = 3.13 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
6/30/80	172	42	440	4	1.500	6.1	1.10	2.03
7/2	152	28	690	8	1.500	6.0	0.61	2.02
7/3	159	26	680	54	1.500	6.4	0.69	1.66
7/7	185	8	680	32	1.250	6.4	0.80	2.10
7/9	185	44	560	46	1.350	5.5	0.84	1.85
7/11	156	29	680	50	1.500	6.1	0.64	1.70
7/18	193	24	500	70	1.050	6.5	1.15	1.73
7/21	113	9	570	62	1.500	6.3	0.57	1.55
7/23	148	21	590	124	1.350	5.8	0.67	1.37
7/25	173	12	600	128	1.500	6.2	0.82	1.25
7/28	249	8	660	26	1.000	6.5	1.13	2.57
7/30	220	16	820	8	1.460	6.5	0.80	2.07
8/1	206	12	688	12	1.500	6.1	0.84	1.98
8/4	200	37	1280	8	1.400	6.3	0.45	2.19
8/6	212	22	1320	10	1.500	6.1	0.45	2.04
8/8	149	42	550	16	1.200	6.4	0.80	2.32
8/11	224	41	730	12	1.5	6.0	0.85	1.99
8/13	230	23	620	34	0.75	6.2	1.06	2.98
8/15	206	37	1010	42	1.3	5.8	0.54	2.10
8/18	214	35.7	650	42	1.2	5.3	0.80	2.14
8/20	209.2	29.9	580	16	1.2	7.1	1.18	2.30
8/22	204	26	580	24	1.2	5.8	0.94	2.25
8/27	193	7	610	10	1.2	6.0	0.87	2.45
8/29	180	21	192	16	1.2	5.55	2.39	2.00
N	24	24	24	24	24	24	24	24
$\bar{x}$	188.8	25.0	678.3	35.6	1.32	6.12	0.88	2.03
σ	30.0	11.7	234.5	32.99	0.2	0.38	0.38	0.37
C.V.%	16.4	46.8	34.6	92.7	14.8	6.2	4.29	18.2

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TABLE A-52. TOC DATA FOR 4 DAY ACRYLONITRILE UNIT

Chemical Compound: Acrylonitrile θ_c = 4 days
Parameter: TOC Volume of Reactor = 3.14 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c day
6/30/80	172	32	1150	8	0.650	6.2	0.43	4.56
7/2	152	14	1270	6	0.750	6.0	0.33	4.05
7/3	159	13	1200	138	0.600	6.0	0.36	2.57
7/7	185	10	1390	0	0.700	6.4	0.39	4.49
7/9	185	18	1460	8	0.750	5.7	0.33	4.04
7/11	156	23	1610	10	0.750	6.2	0.28	4.01
7/14	122	5	1350	18	0.600	6.0	0.25	4.67
7/18	193	0	1210	0	0.700	6.5	0.48	4.49
7/23	148	14	1450	8	0.750	6.0	0.28	4.03
7/25	173	3	1350	4	0.750	6.2	0.36	4.10
7/28	249	76	930	18	0.750	5.6	0.69	3.72
7/30	220	10	1270	2	0.750	6.5	0.52	4.14
8/1	206	7	1212	10	0.750	6.2	0.48	3.95
8/4	200	27	1200	8	0.750	6.4	0.49	3.99
8/6	212	18	1210	8	0.750	6.1	0.49	4.00
8/8	149	19	1240	10	0.750	6.2	0.34	3.95
8/11	224	23	1360	18	0.75	6.2	0.47	3.82
8/13	230	25	1240	10	0.75	6.2	0.53	3.95
8/15	206	28	1410	8	0.75	6.2	0.42	4.02
8/18	214	20	1520	20	0.75	6.4	0.41	3.81
8/20	209	7	1224	6	0.75	6.0	0.47	4.05
8/22	204	2	1450	8	0.75	6.1	0.39	4.03
8/27	193	27	1520	4	0.75	6.4	0.37	4.11
8/29	180	10	972	0	0.75	6.6	0.56	4.19
N	24	24	24	24	24	24	24	24
$\bar{x}$	189.2	18.0	1299.9	13.8	0.73	6.17	0.42	4.03
σ	30.2	15.00	160.6	26.5	0.05	0.23	0.10	0.38
C.V.%	16.0	83.3	12.4	192.1	6.2	3.8	23.8	9.5

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TABLE A-53. TOC DATA FOR 6 DAY ACRYLONITRILE UNIT

Chemical Compound: Acrylonitrile
Parameter: TOC

θ_c = 6 days
Volume of Reactor = 3.04 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	FM	θ_c days
6/30/80	172	16	1580	36	0.400	6.5	0.34	5.64
7/2	152	0.2	1560	34	0.300	6.2	0.29	7.09
7/3	159	7	1670	38	0.300	6.4	0.29	6.93
7/7	185	10	1390	190	0	6.4	0.40	3.48
7/9	185	6	1620	84	0.200	5.8	0.31	6.20
7/11	156	12	1420	20	0.400	6.6	0.34	6.24
7/14	122	0	2320	16	0.400	6.4	0.16	6.89
7/18	193	0	1310	6	0.500	6.4	0.45	5.77
7/21	113	0	1460	10	0.450	6.1	0.22	6.22
7/23	148	0	1620	14	0.450	6.1	0.26	6.09
7/25	173	0	1470	22	0.450	6.3	0.35	5.66
7/28	249	14	1450	180	--	6.2	--	--
7/30	220	0	880	82	0.390	6.25	0.74	3.25
8/1	206	<0	1056	14	0.300	6.0	0.55	8.09
8/4	200	21	1200	12	0.480	6.3	0.55	5.65
8/6	212	19	1060	18	0.450	6.1	0.58	5.57
8/8	149	22	1220	6	0.470	6.3	0.36	6.10
8/11	224	36	1570	6	0.45	6.0	0.41	6.45
8/13	230	21	1690	8	0.45	6.3	0.41	6.36
8/15	206	27	2170	2	0.40	6.1	0.27	7.50
8/18	214	18	1770	8	0.50	6.1	0.35	5.79
8/20	209	5.2	1780	0	0.50	6.1	0.34	6.08
8/22	204	4	1600	8	0.48	6.7	0.40	5.95
8/27	193	8	1710	6	0.45	6.4	0.34	6.46
N	24	24	24	24	24	24	23	23
$\bar{x}$	186.2	10.5	1493.2	32.8	0.39	6.25	0.38	6.06
σ	33.2	9.5	271.97	49.7	0.12	0.2	0.13	1.04
C.V.%	17.8	90.8	18.2	151.5	30.7	3.2	33.2	17.1

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TABLE A-54. COD DATA FOR 2 DAY ACRYLONITRILE UNIT

Chemical Compound: Acrylonitrile

θ_2 = 2 days

Parameter: COD

Volume of Reactor = 3.13 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
7/9/80	563	90	560	46	1.350	5.5	2.54	1.85
7/18	487	20	500	70	1.050	6.5	2.91	1.43
7/25	449	23	600	128	1.500	6.2	2.13	1.25
7/30	538	30	820	8	1.460	6.5	1.96	2.07
8/8	388	74	550	16	1.200	6.4	2.08	2.32
8/22	482	114	580	24	1.2	5.8	2.22	2.25
8/29	471	65	192	16	1.2	6.55	7.39	1.90
N	7	7	7	7	7	7	7	7
$\bar{x}$	483	59	543	44	1.28	6.21	3.03	1.87
σ	53.4	33.65	172.6	39.82	0.15	0.38	1.80	0.37
C.V.%	11.1	57.03	103.1	90.5	11.7	6.1	5.95	19.8

TABLE A-55. COD DATA FOR 4 DAY ACRYLONITRILE UNIT

Chemical Compound: Acrylonitrile

θ_c = 4 days

Parameter: COD

Volume of Reactor = 3.14 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
7/9/80	563	82	1460	8	0.750	5.7	1.01	4.04
7/18	487	8	1210	0	0.700	6.5	1.20	4.49
7/25	449	61	1350	4	0.750	6.2	0.95	4.10
7/30	538	47	1270	2	0.750	6.5	1.26	4.14
8/8	388	67	1240	10	0.750	6.2	0.89	3.95
8/22	482	108	1450	8	0.750	6.1	0.93	4.03
8/29	471	45	972	0	0.750	6.6	1.47	4.19
N	7	7	7	7	7	7	7	7
$\bar{x}$	482.5	59.64	1278.9	4.57	0.74	6.26	1.10	4.13
σ	53.4	29.00	155.5	3.83	0.02	0.29	0.20	0.16
C.V.%	11.1	48.6	114.2	83.8	2.70	4.6	18.1	3.9

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TABLE A-56. COD DATA FOR 6 DAY ACRYLONITRILE UNIT

Chemical Compound: Acrylonitrile

Parameter: COD

θ_c = 6 days

Volume of Reactor = 3.04 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
7/9	563	171	1620	84	0.100	5.8	0.95	6.20
7/18	487	67	1310	6	0.500	6.4	1.13	5.77
7/25	449	35	1470	22	0.450	6.3	0.91	5.66
7/30	538	58	880	82	0.390	6.25	1.81	3.25
8/8	388	43	1220	6	0.470	6.3	0.95	6.10
8/22	482	101	1600	8	0.4	6.7	0.96	7.05
8/29	471	45	1580	0	0.45	6.3	0.89	6.76
N	7	7	7	7	7	7	7	7
$\bar{x}$	482.5	74.26	1382.9	29.7	0.41	6.29	1.09	5.83
σ	53.4	44.53	250.3	34.42	0.09	0.25	0.30	1.15
C.V.%	11.1	59.96	18.10	115.9	22.0	3.9	27.9	19.7

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TABLE A-57. BOD_5 DATA FOR 2 DAY ACROLEIN UNIT

Chemical Compound: Acrolein

θ_c = 2 days

Parameter: BOD_5

Volume of Reactor = 3.06 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
6/30/80	144	7.6	452	16	1.5	6.0	0.90	1.84
7/14	270	14.6	376	6	1.5	5.9	1.99	1.95
7/16	230	6.0	352	0	1.5	5.7	1.75	2.04
7/18	192	9.2	908	4	1.5	6.0	0.60	2.01
7/28	225	6.6	504	30	1.5	5.8	1.22	1.74
7/30	202	9.5	464	0	1.5	6.2	1.27	2.04
8/1	213	3.9	552	10	1.5	6.0	1.09	1.93
8/6	290	12.6	340	24	1.5	5.0	2.01	1.75
8/8	234	14.6	508	20	1.0	5.9	1.28	2.57
8/11	129	10.1	772	14	1.5	6.4	0.50	1.93
8/13	180	3.6	624	16	1.5	5.8	0.79	1.93
8/15	228	12.9	272	68	0.6	5.6	2.21	1.72
8/18	276	8.7	364	58	0.5	6.6	2.36	2.08
8/20	247	14.5	380	46	0.5	6.0	1.84	2.62
8/22	204	17.7	416	30	1.5	6.1	1.41	1.67
8/25	270	8.7	572	34	1.5	6.4	1.42	1.71
8/27	228	2.5	500	30	1.5	5.6	1.20	1.75
8/29	261	15.3	916	24	1.5	7.6	1.02	1.84
N	18	18	18	18	18	18	18	18
$\bar{x}$	223.5	9.92	515.1	23.9	1.36	6.03	1.38	1.95
σ	42.6	4.32	182.8	18.4	0.32	0.51	0.53	0.26
C.V.%	19.1	43.5	35.5	76.9	23.9	8.5	38.3	13.3

TABLE A-58. BOD_5 DATA FOR 4 DAY ACROLEIN UNIT

Chemical Compound: Acrolein θ_c = 4 days

Parameter: BOD_5 Volume of Reactor = 3.08 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
6/30/80	144	2.1	1304	8	0.75	6.2	0.32	3.93
7/11	254	11.2	1448	0	0	6.1	0.50	--
7/14	270	13.5	2964	16	0.75	6.1	0.26	3.95
7/16	230	10.0	2052	2	0.75	6.3	0.33	4.08
7/18	192	7.5	1212	8	0.75	6.0	0.44	3.93
7/21	246	6.8	1036	30	0.75	5.8	0.64	3.44
7/23	252	6.5	1020	20	0.75	6.0	0.69	3.61
7/25	216	6.1	824	0	0.75	6.1	0.75	4.11
7/28	225	5.1	740	74	0.75	5.8	0.82	2.45
7/30	202	9.6	920	4	0.75	6.1	0.63	3.98
8/1	213	5.4	876	10	0.75	6.3	0.72	3.79
8/4	48	7.1	968	8	0.75	6.4	0.15	3.87
8/6	290	7.6	716	0	0.75	6.5	1.23	4.11
8/8	234	10.2	1060	0	0.60	6.3	0.65	5.13
8/11	129	8.9	1228	8	0.75	6.0	0.28	3.94
8/13	180	8.3	1344	12	0.75	6.3	0.39	3.85
8/15	228	7.3	1228	8	0.75	5.9	0.51	3.93
8/18	276	3.0	1188	34	0.75	6.2	0.67	3.40
8/20	247	5.9	1368	22	0.75	6.1	0.51	3.68
8/22	204	7.5	1476	16	0.75	6.2	0.40	3.81
8/25	270	7.4	1212	16	0.75	6.4	0.67	3.74
8/27	228	4.5	1496	8	0.75	6.3	0.45	3.95
8/29	261	6.8	1768	14	0.75	7.0	0.48	3.85
N	23	23	23	23	23	22	23	22
$\bar{x}$	219.1	7.45	1282.9	13.8	0.71	6.2	0.54	3.84
σ	53.4	2.36	476.4	15.7	0.15	0.25	0.23	0.44
C.V.%	24.4	31.7	37.1	113.6	21.8	4.00	42.6	11.5

TABLE A-59. BOD_5 DATA FOR 6 DAY ACROLEIN UNIT

Chemical Compound: Acrolein θ_c = 6 days

Parameter: BOD_5 Volume of Reactor =3.10 liters

Date	Si mg/l	Se mg/l	X mg/l	X_e mg/l	Fw l/day	F ml/min	F/M	θ_c days
6/30/80	144	1.7	1172	2	0.50	6.4	0.37	6.08
7/11	254	6.0	1292	12	0	6.0	0.55	--
7/14	270	8.8	1552	10	0.50	6.1	0.49	5.78
7/16	230	2.7	2164	0	0.50	6.3	0.31	6.20
7/18	192	5.2	2100	6	0.50	6.2	0.26	6.00
7/21	246	3.3	1804	2	0.50	6.2	0.39	6.12
7/23	252	5.3	1588	6	0.50	6.3	0.46	5.94
7/25	216	4.1	1312	0	0.50	6.2	0.47	6.20
7/28	225	4.8	1156	70	0.50	6.2	0.56	3.67
7/30	202	9.0	1240	0	0.50	6.2	0.47	6.20
8/1	213	3.8	1124	0	0.50	5.9	0.56	6.20
8/4	48	6.0	872	6	0.50	6.6	0.17	5.72
8/6	290	5.6	1108	0	0.50	6.5	0.79	6.20
8/8	234	8.4	1188	0	0.40	6.5	0.59	7.75
8/11	129	4.8	1520	6	0.5	6.6	0.26	5.92
8/13	180	6.6	1804	8	0.5	6.5	0.31	5.89
8/15	228	4.8	2104	6	0.5	6.4	0.32	6.00
8/18	276	5.6	1740	48	0.5	6.6	0.49	4.64
8/20	247	4.8	1789	22	0.5	6.4	0.41	5.41
8/22	204	4.4	1888	10	0.5	6.3	0.32	5.84
8/25	270	4.5	1808	20	0.5	6.6	0.46	5.46
8/27	228	1.5	2208	4	0.5	6.5	0.31	6.07
8/29	261	4.8	2192	4	0.5	6.6	0.37	6.06
N	23	23	23	23	23	23	23	22
$\bar{x}$	219.1	5.11	1596.4	10.5	0.47	6.4	0.42	5.88
σ	53.4	1.88	400.2	16.4	0.10	0.20	0.13	0.71
C.V.%	24.4	36.9	25.1	156.8	21.9	3.1	32.1	12.1

TABLE A-60. TOC DATA FOR 2 DAY ACROLEIN UNIT

Chemical Compound: Acrolein
Parameter: TOC

θ_c = 2 days
Volume of Reactor = 3.06 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
6/30/80	191	56	452	16	1.5	6.0	1.19	1.84
7/14	175.6	14.6	376	6	1.5	5.9	1.30	1.95
7/25	120.3	7.0	384	26	1.5	6.0	0.88	1.70
7/28	199	6.6	504	30	1.5	5.8	1.08	1.74
7/30	182	9.5	464	0	1.5	6.2	1.14	2.04
8/1	148	3.9	552	10	1.5	6.0	0.76	1.93
8/6	243.6	12.6	340	26	1.5	5.0	1.69	1.73
8/8	213	14.6	508	20	1.5	5.9	1.16	1.83
8/11	200.5	22.1	772	14	1.5	6.4	0.78	1.93
8/13	202	23	624	16	1.5	5.8	0.88	1.90
8/15	195	47	272	68	0.5	5.6	1.89	1.72
8/18	189.8	35.6	364	58	0.5	6.6	1.62	2.08
8/20	185.5	57.6	380	46	0.5	6.0	1.38	2.62
8/22	180	38	416	30	1.5	6.1	1.24	1.67
8/25	223	50	572	34	1.5	6.4	1.17	1.71
8/27	196.5	45.5	500	30	1.5	5.6	1.04	1.75
8/29	183.5	39	916	24	1.5	7.6	0.72	1.84
N	17	17	17	17	17	17	17	17
$\bar{x}$	189.9	28.4	493.9	26.6	1.32	6.05	1.17	1.88
σ	26.5	18.1	157.0	17.2	0.38	0.52	0.32	0.22
C.V.%	14.0	63.7	31.8	64.7	28.8	8.6	27.6	11.7

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TABLE A-61. TOC DATA FOR 4 DAY ACROLEIN UNIT

Chemical Compound: Acrolein　　θ_c = 4 days
Parameter: TOC　　Volume of Reactor = 3.08 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
6/30/80	191	45	1304	8	0.75	6.2	0.42	3.93
7/11	156	11.2	1448	0.1	0.1	6.1	0.31	--
7/14	175.6	13.5	2964	16	0.75	6.1	0.17	3.95
7/21	160.5	6.8	1036	30	0.75	5.8	0.42	3.44
7/25	120.3	6.1	824	0.1	0.75	6.1	0.42	4.10
7/28	199	5.1	740	74	0.75	5.8	0.73	2.45
7/30	182	9.6	920	4	0.75	6.1	0.56	3.98
8/1	148	5.4	876	10	0.75	6.3	0.50	3.79
8/4	188	7.1	968	8	0.75	6.4	0.58	3.87
8/6	243.6	7.6	716	0.1	0.75	6.5	1.03	4.10
8/8	213	10.2	1060	0.1	0.75	6.3	0.59	4.10
8/11	200.5	23.3	1288	8	0.75	6.0	0.44	3.94
8/13	202	25	1344	12	0.75	6.3	0.44	3.85
8/15	195	41	1228	8	0.75	5.9	0.44	3.93
8/18	189.8	32.3	1188	34	0.75	6.2	0.46	3.40
8/20	185.5	18.1	1368	22	0.75	6.1	0.39	3.68
8/22	180	12	1476	16	0.75	6.2	0.35	3.81
8/25	223	44	1212	16	0.75	6.4	0.55	3.74
8/27	196.5	44	1496	8	0.75	6.3	0.39	3.95
8/29	183.5	34	1768	14	0.75	7.0	0.34	3.85
N	20	20	20	20	20	20	20	20
$\bar{x}$	186.6	20.1	1261.2	14.4	0.72	6.2	0.48	5.13
σ	26.1	14.3	473.3	16.4	0.14	0.26	0.17	5.87
C.V.%	14.0	71.1	37.5	113.9	19.4	4.2	35.8	114.4

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TABLE A-62. TOC DATA FOR 6 DAY ACROLEIN UNIT

Chemical Compound: Acrolein
Parameter: TOC

θ_c = 6 days
Volume of Reactor = 3.10 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
6/30/80	191	42	1172	2	0.5	6.4	0.48	6.08
7/11	156	6.0	1292	12	0.1	6.0	0.34	20.03
7/14	175.6	8.8	1552	10	0.5	6.1	0.32	5.78
7/21	160.5	3.3	1804	2	0.5	6.2	0.26	6.12
7/25	120.3	4.1	1312	0.1	0.5	6.2	0.26	6.19
7/28	199	4.8	1156	70	0.5	6.2	0.50	3.67
7/30	182	9.0	1240	0.1	0.5	6.2	0.42	6.19
8/1	148	3.8	1124	0.1	0.5	5.9	0.36	6.19
8/4	188	6.0	872	6	0.5	6.6	0.66	5.72
8/6	243.6	5.6	1108	0.1	0.5	6.5	0.66	6.19
8/8	213	8.4	1188	0.1	0.5	6.5	0.54	6.19
8/11	200.5	22.6	1520	6	0.5	6.6	0.40	5.92
8/13	202	21	1804	8	0.5	6.5	0.34	5.89
8/15	195	47	2104	6	0.5	6.4	0.28	6.00
8/18	189.8	32.1	1740	48	0.5	6.6	0.33	4.64
8/20	185.5	22.3	1780	22	0.5	6.4	0.31	5.41
8/22	180	12	1888	10	0.5	6.3	0.28	5.84
8/25	223	43	1808	20	0.5	6.6	0.38	5.46
8/27	196.5	42	2208	4	0.5	6.5	0.27	6.07
8/29	183.5	36.5	2192	4	0.5	6.6	0.26	6.06
N	20	20	20	20	20	20	20	20
$\bar{x}$	186.6	19.0	1543.2	11.5	0.48	6.4	0.38	6.48
σ	26.1	15.3	387.7	17.2	0.09	0.21	0.12	3.16
C.V.%	14.0	80.5	25.1	149.6	18.8	3.3	32.2	48.9

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TABLE A-63. COD DATA FOR 2 DAY ACROLEIN UNIT

Chemical Compound: Acrolein

Parameter: COD

θ_c = 2 days

Volume of Reactor = 3.06 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
7/18/80	444	138.6	908	4	1.5	6.0	1.38	2.01
7/25	361	84	384	26	1.5	6.0	2.65	1.70
7/30	515	112	464	0	1.5	6.2	3.24	2.04
8/8	517.5	113.7	508	20	1.0	5.9	2.83	2.57
8/25	476	161	572	100	1.5	6.4	2.51	1.30
8/29	549	94	916	26	1.5	7.6	2.14	1.83
N	6	6	6	6	6	6	6	6
$\bar{x}$	477.1	117.2	625.3	29.3	1.42	6.4	2.46	1.91
σ	61.5	25.9	209.6	33.1	0.19	0.58	.59	0.38
C.V.%	12.9	22.1	33.5	113.0	13.4	9.1	23.8	20.1

TABLE A-64. COD DATA FOR 4 DAY ACROLEIN UNIT

Chemical Compound: Acrolein

Parameter: COD

θ_c = 4 days

Volume of Reactor = 3.08 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
7/18/80	444	118.8	1212	38	0.75	6.0	1.03	3.94
7/25	361	81	824	0	0.75	6.1	1.25	4.11
7/30	515	131	920	4	0.75	6.1	1.60	3.98
8/8	517.5	105.8	1060	0	0.6	6.3	1.44	5.13
8/25	476	147	1212	48	0.75	6.4	1.18	3.16
8/29	549	114	1768	32	0.75	7.0	1.02	3.57
N	6	6	6	6	6	6	6	6
$\bar{x}$	477.1	116.3	1166	19.7	0.73	6.3	1.25	3.98
σ	61.5	20.5	303.3	23.8	0.06	0.33	0.21	0.60
C.V.%	12.9	17.6	26.0	120.8	8.2	5.2	16.8	15.2

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TABLE A-65. COD DATA FOR 6 DAY ACROLEIN UNIT

Chemical Compound: Acrolein

Parameter: COD

θ_c = 6 days

Volume of Reactor = 3.10 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
7/18/80	444	110.9	2100	6	0.5	6.2	0.61	6.00
7/25	361	100	1312	0	0.5	6.2	0.79	6.20
7/30	515	101	1240	0	0.5	6.2	1.20	6.20
8/8	517.5	98	1188	0	0.4	6.5	1.32	7.75
8/25	476	134	1808	58	0.5	6.6	0.81	4.46
8/29	549	126	2192	6	0.5	6.6	0.77	6.00
N	6	6	6	6	6	6	6	6
$\bar{X}$	477.1	111.7	1640	11.7	0.48	6.4	0.92	6.10
σ	61.5	13.8	410.3	20.8	0.04	0.19	0.25	0.95
C.V.%	12.9	12.4	25.0	177.8	8.3	2.97	27.6	15.6

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TABLE A-66. BOD_5 DATA FOR 2 DAY DICHLOROPROPANE UNIT

Chemical Compound: Dichloropropane θ_c = 2 days

Parameter: BOD_5 Volume of Reactor = 3.255 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
6/30/80	289	2.2	336	3	1.5	6.3	2.40	2.11
7/2	147	1.2	622	2	1.4	6.2	0.65	2.30
7/4	148	1.0	340	8	1.5	5.8	1.12	2.03
7/7	205	1.56	280	120	1.5	6.4	2.07	0.90
7/9	178	1.62	204	32	1.5	5.2	2.01	1.56
7/12	282	1.25	280	1	0.0	6.2	2.76	--
7/14	246	5.56	496	1	1.5	6.2	1.36	2.16
7/16	260	5.1	324	13	1.0	6.0	2.13	2.71
7/18	273	6.0	304	15	1.5	6.3	2.50	1.87
7/21	281	5.16	192	18	0	6.00	3.88	5.79
7/23	299	6.70	264	6	0	6.40	3.21	--
7/25	270	5.46	800	18	0	5.8	0.87	--
7/28	264	4.57	564	56	0	6.60	1.37	4.97
7/30	258	1.02	598	17	0	6.20	1.18	--
8/1	265	5.54	444	136	0	6.4	1.69	1.66
8/4	248	1.4	480	6	1.500	5.6	1.28	2.10
8/6	267	1.54	624	1	1.500	6.4	1.21	2.16
8/8	222	1.0	352	27	1.350	6.0	1.67	1.91
8/11	240	2.58	780	4	1.50	6.4	0.87	2.13
8/13	247	2.81	672	14	1.50	6.5	1.06	2.03
8/15	220	2.58	408	9	1.50	6.4	1.53	2.02
8/18	262	2.03	592	7	1.5	6.05	1.19	2.09
8/20	247	2.62	300	4	1.50	6.20	2.27	2.08
8/22	262	2.67	480	16	1.50	6.05	1.46	1.97
8/25	265	2.90	464	3	1.50	5.90	1.49	2.13
8/27	255	1.30	544	26	1.50	6.0	1.24	1.90
8/29	252	1.71	632	11	1.50	6.60	1.16	2.05
N	27	27	27	27	27	27	27	23
$\bar{x}$	246.5	2.93	458.4	21.37	1.08	6.16	1.69	2.29
σ	37.4	1.79	167.1	32.3	0.65	0.31	0.75	1.01
C.V.%	15.2	61.1	36.4	151.1	59.9	5.00	44.2	44.2

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TABLE A-67. BOD$_5$ DATA FOR 4 DAY DICHLOROPROPANE UNIT

Chemical Compound: Dichloropropane
θ_c = 4 days
Parameter: BOD$_5$
Volume of Reactor = 3.065 liters

Date	Si mg/l	Se mg/l	X mg/l	Se mg/l	Fw l/day	F ml/min	F/M	θ_c days
6/30/80	289	1.38	920	2	0.75	6.3	0.93	4.02
7/2	147	.67	902	2	0.75	6.25	0.48	4.02
7/4	148	.45	672	2	0.75	5.6	0.58	4.01
7/7	205	1.15	620	13	0.75	6.6	1.03	3.51
7/9	178	.40	652	1	0.75	6.8	0.87	4.04
7/12	282	1.15	716	1	0.0	6.0	1.11	--
7/14	246	2.27	789	1	0.75	6.6	0.98	4.05
7/16	260	.6	808	3	0.75	5.8	0.88	3.99
7/18	273	1.4	824	10	0.75	5.8	0.90	3.78
7/21	281	0.83	780	17	0.750	6.10	1.03	3.54
7/23	299	1.4	760	17	0.750	6.00	1.13	3.52
7/25	270	1.03	848	17	0.750	6.25	0.93	3.56
7/28	264	1.36	844	7	0.750	7.00	1.03	3.82
7/30	258	1.00	949	6	0.750	6.0	0.77	3.91
8/1	265	1.57	760	84	0.750	6.2	1.02	2.27
8/4	248	0.52	1264	1	0.750	6.0	0.55	4.06
7/6	267	1.10	1392	2	0.750	6.0	0.54	4.05
8/8	222	0.67	1308	1	0.750	5.8	0.46	4.07
8/11	240	1.22	1320	1	0.75	6.0	0.51	4.07
8/13	247	1.41	1092	8	0.75	6.3	0.67	3.88
8/15	220	0.92	1352	1	0.75	6.4	0.49	4.06
8/18	262	1.26	1464	2	0.75	6.05	0.51	4.05
8/20	247	0.80	1276	0	0.75	6.00	0.55	4.09
8/22	262	0.75	1469	1	0.75	6.60	0.55	4.07
8/25	265	2.10	1212	5	0.75	6.05	0.62	3.97
8/27	255	0.65	1384	6	0.75	5.6	0.48	3.98
8/29	252	1.47	1276	83	0.75	6.70	0.62	2.70
N	27	27	27	27	27	25	27	26
$\bar{x}$	246.5	1.13	1023.9	9.9	0.69	6.18	0.75	3.81
σ	37.4	0.47	297.7	21.38	0.2	0.35	0.23	0.43
C.V.%	15.2	41.9	27.3	216.0	28.4	5.66	30.4	11.2

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TABLE A-68. BOD_5 DATA FOR 6 DAY DICHLOROPROPANE UNIT

Chemical Compound: Dichloropropane

θ_c = 6 days

Parameter: BOD_5

Volume of Reactor = 3.129 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
6/30/80	289	2.01	908	8	0.50	6.3	0.93	5.68
7/2	147	1.45	669	6	0.45	6.2	0.63	6.24
7/4	148	.90	568	2	0.45	6.25	0.75	6.65
7/7	205	3.0	432	16	0.50	6.4	1.40	4.35
7/9	178	1.06	532	5	0.5	5.4	0.83	5.73
7/12	282	6.45	972	1	0.0	5.8	0.88	--
7/14	246	4.56	416	0	0.50	6.4	1.74	6.26
7/16	260	3.4	638	3	0.50	6.9	1.29	5.90
7/18	273	3.9	456	13	0.0	6.2	1.71	--
7/21	281	2.80	736	8	--	6.20	1.09	--
7/23	299	2.6	764	4	--	6.35	1.14	--
7/25	270	3.78	1324	8	--	6.30	0.50	--
7/28	264	0.97	1248	1	--	7.20	0.70	--
7/30	258	4.80	1590	4	--	6.3	0.47	--
8/1	265	3.78	1228	32	--	6.3	0.63	--
8/4	248	0.6	1324	8	0.50	6.25	0.54	5.84
8/6	267	0.80	1324	1	0.50	6.4	0.59	6.20
8/8	222	0.50	1308	1	0.50	5.6	0.44	6.21
8/11	240	0.75	1408	1	0.50	6.4	0.50	6.21
8/13	247	1.45	1284	5	0.50	6.5	0.58	5.98
8/15	220	0.76	1752	1	0.50	6.25	0.36	6.22
8/18	262	1.09	1768	5	0.50	6.10	0.42	6.07
8/20	247	0.74	1180	0	0.50	6.05	0.58	6.26
8/22	262	0.67	1324	3	0.50	6.25	0.57	6.10
8/25	265	1.71	1452	5	0.50	5.90	0.50	6.03
8/27	255	0.83	2192	1	0.50	5.8	0.31	6.23
8/29	252	1.95	1678	0	0.50	6.30	0.44	6.26
N	27	27	27	27	27	20	27	19
$\bar{x}$	246.5	2.12	1128.7	5.26	0.35	6.23	0.76	6.02
σ	37.4	1.56	462.4	6.53	0.23	0.35	0.38	0.45
C.V.%	15.2	73.6	41.0	124.2	64.6	5.55	50.6	7.5

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TABLE A-69. TOC DATA FOR 2 DAY DICHLOROPROPANE UNIT

Chemical Compound: Dichloropropane θ_c = 2 days

Parameter: TOC Volume of Reactor = 3.255 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
6/30/80	184	31	336	3	1.5	6.3	1.53	2.11
7/2	139.7	18.7	622	2	1.4	6.2	0.62	2.30
7/4	117.9	19.8	340	8	1.5	5.8	0.89	2.03
7/9	153	24	204	32	1.5	5.2	1.73	1.56
7/12	189	17	280	1	0.0	6.2	1.85	--
7/21			192	18	--	6.0	--	--
7/23	179	15.4	264	6	--	6.4	1.92	--
7/25	172	22.2	800	18	--	5.8	0.55	--
7/28	186	8	564	56	--	6.6	0.96	4.97
7/30	209	8	598	17	--	6.2	0.96	--
8/1	223	13	444	136	--	6.4	1.42	1.66
8/4	227	41	480	6	1.500	5.6	1.17	2.10
8/6	198	11	624	1	1.500	6.4	0.90	2.16
8/8	239	9.5	352	22	1.350	6.0	1.80	1.98
8/11	258.5	10.8	780	4	1.0	6.4	0.94	3.17
8/13	221	8	672	14	1.0	6.5	0.95	2.92
8/15	188	30	408	9	1.6	6.4	1.30	1.91
8/18	184.9	9.4	592	7	1.5	6.05	0.84	2.09
8/20	189.5	19.8	300	4	1.5	6.2	1.73	2.08
8/22	200	3	480	16	1.5	6.05	1.12	1.97
8/25	297	27	464	11	1.5	5.9	1.67	2.03
8/27	205	27	544	26	1.5	6.0	1.00	1.90
8/29	173	17	632	11	1.5	6.6	0.80	2.05
N	22	22	22	22	22	18	22	18
$\bar{x}$	196.9	17.7	490	18.6	0.97	6.15	1.21	2.28
σ	38.0	9.3	163.9	28.5	0.68	0.33	0.41	0.75
C.V.%	19.3	52.3	33.5	153.4	70.2	5.4	34.2	32.9

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TABLE A-70. TOC DATA FOR 4 DAY DICHLOROPROPANE UNIT

Chemical Compound: Dichloropropane

θ_c = 4 days

Parameter: TOC

Volume of Reactor = 3.065 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
6/30/80	184	21	920	2	0.75	6.3	0.59	4.02
7/2	139.7	8.6	902	2	0.75	6.25	0.45	4.02
7/4	117.9	9.2	672	2	0.75	5.6	0.46	4.01
7/7	145	3	620	13	0.75	6.6	0.73	3.51
7/9	153	14	652	1	0.75	6.8	0.75	4.04
7/12	189	3.3	716	1	0.0	6.0	0.74	
7/16	260	31.3	808	3	0.75	5.8	0.88	3.99
7/21			780	17	0.750	6.1	--	--
7/23	179	0	760	17	0.750	6.0	0.66	3.53
7/25	172	0	848	17	---	6.25	0.60	
7/28	186	76	844	7	0.750	7.0	0.72	3.82
7/30	209	0	949	6	0.750	6.0	0.62	3.91
8/1	223	9	760		0.750	6.2	0.85	2.27
8/4	227	48	1264	1	0.750	6.0	0.51	4.06
8/6	198	15	1392	2	0.750	6.0	0.40	4.05
8/8	239	11.5	1308	1	0.750	5.8	0.50	4.07
8/11	258.5	4.7	1320	1	0.75	6.0	0.55	4.07
8/13	221	1	1092	8	0.75	6.3	0.60	3.88
8/15	188	32	1352	1	0.75	6.4	0.42	4.06
8/18	184.9	15.8	1464	2	0.75	6.05	0.36	4.05
8/20	189.5	7.1	1276	0	0.75	6.0	0.42	4.09
8/25	297	15	1212	5	0.75	6.05	0.70	3.97
8/27	205	16	1384	6	0.75	5.6	0.39	3.98
8/29	173	14.5	1276		0.75	6.7	0.43	2.70
N	23	23	24	24	23	23	23	22
$\bar{x}$	198.9	17.8	1061.7	10.95	0.71	6.17	0.58	2.96
σ	42.9	17.4	286.6	24.3	0.16	0.35	0.15	4.03
C.V.%	21.6	98.0	27.0	22.5	22.9	5.6	25.8	136.2

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TABLE A-71. TOC DATA FOR 6 DAY DICHLOROPROPANE UNIT

Chemical Compound: Dichloropropane — θ_c = 6 days

Parameter: TOC — Volume of Reactor = 3.129 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
6/30/80	184	25	908	8	0.50	6.3	0.59	5.68
7/2	139	32.3	669	6	0.45	6.2	0.60	6.24
7/4	117	45.9	568	2	0.45	6.25	0.60	6.65
7/9	153	7	532	5	0.50	5.4	0.71	5.73
7/12	189	21	972	1	0.0	5.8	0.52	--
7/16	260	160.8	638	3	0.50	6.9	1.29	5.90
7/21	---	---	736	8	---	6.20	--	--
7/23	179	8.3	764	4	---	6.35	0.68	--
7/25	172	9.6	1324	8	---	6.30	0.38	--
7/28	186	14	1248	1	---	7.2	0.49	--
7/30	209	12	1590	4	---	6.3	0.38	--
8/1	223	7	1228	32	---	6.3	0.53	19.06
8/4	227	40	1324	8	0.500	6.25	0.49	5.85
8/6	198	15	1324	1	0.500	6.4	0.44	6.20
8/8	239	11.2	1308	1	0.500	5.6	0.47	6.21
8/11	258	5.5	1408	1	0.5	6.4	0.54	6.21
8/13	221	1	1284	5	0.5	6.5	0.51	5.98
8/15	188	18	1752	1	0.5	6.25	0.31	6.22
8/18	184	11.6	1768	5	0.5	6.10	0.29	6.07
8/20	189	18.3	1180	0	0.5	6.05	0.45	6.26
8/22	200	18	1324	3	0.5	6.25	0.43	6.10
8/25	297	17	1452	5	0.5	5.9	0.56	6.03
8/27	205	30	2192	1	0.5	5.8	0.25	6.23
8/29	173	16.5	1678	0	0.5	6.3	0.30	6.26
N	23	23	23	23	23	17	23	18
$\bar{x}$	199.7	23.7	1236.3	4.57	0.39	6.22	0.51	6.83
σ	39.3	31.2	413.8	6.38	0.20	0.37	0.20	2.98
C.V.%	19.7	131.7	33.5	139.7	52.5	5.98	39.9	43.6

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TABLE A-72. COD DATA FOR 2 DAY DICHLOROPROPANE UNIT

Chemical Compound: Dichloropropane θ_c = 2 days

Parameter: COD Volume of Reactor = 3.255 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
7/4/80	343	24.5	340	8	1.5	5.8	2.59	2.03
7/18	468	11.9	304	15	1.5	6.3	4.29	1.87
7/25	526	22.2	800	18	--	5.8	1.69	--
7/30	586	54	598	17	--	6.2	2.69	--
8/8	498	58.8	352	22	1.35	6.0	3.76	1.98
8/22	470	87.4	480	16	1.50	6.4	2.97	1.96
8/25	470	87.4	464	11	1.50	6.5	2.98	2.01
N	7	7	7	7	5	7	7	5
$\bar{x}$	480.3	49.5	476.9	15.3	1.47	6.14	2.97	1.97
σ	68.7	28.8	162.6	4.3	0.06	0.26	0.78	0.06
C.V.%	14.3	58.2	34.1	28.1	4.1	4.23	26.3	2.8

TABLE A-73. COD DATA FOR 4 DAY DICHLOROPROPANE UNIT

Chemical Compound: Dichloropropane θ_c = 4 days

Parameter: COD Volume of Reactor = 3.065 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
7/4/80	343	24.5	672	2	0.75	5.6	1.34	4.01
7/18	468	19.8	824	10	0.75	5.8	1.55	3.78
7/25	526	0	848	17	0.75	6.25	1.72	3.56
7/30	586	26	949	6	0.75	6.0	1.74	3.91
8/8	498	51	1308	1	0.75	5.8	1.04	4.07
8/22	470	73.9	1469	1	0.75	6.0	0.90	4.07
8/25	470	73.9	1212	5	0.75	6.3	1.15	3.97
N	7	7	7	7	7	7	7	7
$\bar{x}$	480.3	38.4	1040	6.0	0.75	5.96	1.36	3.91
σ	68.7	26.4	271	5.4	0.0	0.24	0.37	0.17
C.V.%	14.3	68.8	26.1	90.3	0.0	4.00	24.1	4.4

TABLE A-74. COD DATA FOR 6 DAY DICHLOROPROPANE UNIT

Chemical Compound: Dichloropropane

θ_c = 6 days

Parameter: COD

Volume of Reactor = 3.129 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
7/4/80	343	32.6	568	2	0.45	6.3	1.74	6.65
7/18	468	67.3	456	13	--	6.2	2.93	--
7/25	526	9.6	1324	8	--	6.3	1.15	--
7/30	586	45.0	1590	4	--	6.3	1.07	--
8/8	498	27.5	1308	1	0.5	5.6	0.98	6.21
8/22	470	60.5	1324	3	0.50	6.4	1.05	6.10
8/25	470	60.5	1452	5	0.50	6.5	0.97	6.01
N	7	7	7	7	4	7	7	4
$\bar{x}$	480.3	43.3	1146.0	5.1	0.49	6.22	1.41	6.24
σ	68.7	19.6	414.3	3.9	0.02	0.27	0.67	0.26
C.V.%	14.3	45.3	36.2	75.5	4.1	4.3	47.3	4.0

TABLE A-75. BOD_5 DATA FOR 2 DAY ACROLEIN, ACRYLONITRILE AND DICHLOROPROPANE UNIT

Chemical Compound: Combined, Control, Acrolein
Acrylonitrile, Dichloropropane
θ_c = 2 days

Parameter: BOD5
Volume of Reactor = 3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
6/30/80	260	4.5	480	40	1.0	6.2	1.59	2.13
7/2	310	6.5	810	88	1.0	6.2	1.12	1.95
7/4	140	3.0	800	0	1.0	6.2	0.51	3.05
7/7	320	7.0	611	96	1.0	6.2	1.53	1.68
7/9	360	4.0	820	119	1.0	6.2	1.29	1.74
7/11	180	12.0	601	61	1.0	6.2	0.88	2.00
7/14	228	7.8	667	41	1.0	6.2	1.00	2.31
7/18	340	18.9	1706	67	1.0	6.2	0.58	2.53
7/21	315	8.6	670	290	1.0	6.2	1.38	0.94
7/23	315	4.5	1150	40	1.5	6.2	0.80	1.83
7/25	308	5.0	1121	22	1.5	6.2	0.80	1.92
7/28	310	6.0	920	22	1.5	6.2	0.99	1.89
7/30	280	4.0	722	18	1.5	6.2	1.14	1.89
8/1	305	8.0	821	18	1.5	6.2	1.09	1.90
8/4	260	7.0	700	60	1.5	6.2	1.09	1.60
8/6	240	3.5	540	0	1.5	6.2	1.30	2.30
8/8	250	3.2	830	20	1.5	6.2	0.88	1.89
8/11	188	3.5	320	18	1.5	15.0	4.16	1.35
8/13	250	7.0	460	38	0.6	6.2	1.59	2.71
8/15	288	16.0	520	25	0.6	6.2	1.62	3.51
8/18	350	18.9	320	20	1.5	6.2	3.20	1.70
8/20	315	8.6	520	60	0.0	6.2	1.77	4.26
8/22	315	4.5	491	20	1.5	6.2	1.88	1.80
8/25	308	5.0	652	53	1.2	6.2	1.38	1.90
8/27	255	9.0	589	41	1.5	6.2	1.27	1.67
8/29	268	10.0	520	62	1.5	6.2	1.51	1.48
N	26	26	26	26	26	26	26	26
$\bar{x}$	279.2	7.5	706.2	51.5	1.5	6.24	1.40	2.07
σ	52.3	4.4	284.3	55.5	0.37	1.69	0.76	0.67
C.V.%	18.7	58.7	40.3	107.8	3.08	25.8	53.9	32.6

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TABLE A-76. BOD_5 DATA FOR 4 DAY ACROLEIN, ACRYLONITRILE AND DICHLOROPROPANE UNIT

Chemical Compound: Combined-Control, Acrolein Acrylonitrile, Dichloropropane

θ_c = 4 days

Parameter: BOD_5

Volume of Reactor = 3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
6/30/80	260	2.0	1280	16	0.75	6.2	0.59	3.73
7/2	310	2.3	1150	12	0.75	6.2	0.79	3.78
7/4	140	3.2	1200	16	0.75	6.2	0.34	3.71
7/7	320	7.5	820	32	0.75	6.2	1.14	3.17
7/9	360	12.0	1650	36	0.75	6.2	0.64	3.51
7/11	180	3.3	849	39	0.75	6.2	0.62	3.05
7/14	228	3.4	1252	28	0.75	6.2	0.53	3.50
7/18	340	7.5	1391	26	0.75	6.2	0.72	3.58
7/21	315	7.2	1059	13	0.75	6.2	0.87	3.73
7/23	315	3.6	1350	22	0.75	6.2	0.68	3.64
7/25	308	13.5	1240	8	0.75	6.2	0.73	3.88
7/28	310	12.0	1420	8	0.75	6.2	0.64	3.91
7/30	280	7.0	1147	9	0.75	6.2	0.71	3.85
8/1	305	6.0	1345	9	0.75	6.2	0.66	3.88
8/4	260	5.0	840	48	0.75	6.2	0.91	2.87
8/6	240	4.0	900	0	0.75	6.2	0.78	4.06
8/8	250	3.0	280	12	0.75	6.2	2.61	3.10
8/11	188	4.0	710	20	0.75	6.2	0.78	3.38
8/13	250	3.0	480	48	0.3	6.2	1.52	3.43
8/15	288	15.0	1090	10	0.3	6.2	0.77	8.61
8/18	350	7.5	1492	0	0.75	6.2	0.69	4.06
8/20	315	7.2	1090	38	0.75	6.2	0.85	3.24
8/22	315	3.6	1540	15	0.75	6.2	0.60	3.80
8/25	308	13.5	1521	46	0.6	6.2	0.59	3.96
8/27	255	4.0	1411	38	0.75	6.2	0.53	3.40
8/29	268	2.6	1400	50	0.75	6.2	0.56	3.23
N	26	26	26	26	26	26	26	26
$\bar{x}$	279.2	6.3	1150.3	23.1	0.71	6.2	0.79	3.77
σ	52.3	3.8	328.4	15.3	0.12	0.0	0.42	1.02
C.V.%	18.7	60.3	28.6	66.2	16.9	0.0	53.5	27.0

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TABLE A-77. BOD$_5$ DATA FOR 6 DAY ACROLEIN, ACRYLONITRILE AND DICHLOROPROPANE UNIT

Chemical Compound: Combined-Control, Acrolein Acrylonitrile, Dichloropropane

Parameter: BOD5

θ_c = 6 days

Volume of Reactor = 2.97 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
6/30/80	260	1.5	1110	28	0.5	6.2	0.70	4.61
7/2	310	2.6	1450	54	0.5	6.2	0.64	4.17
7/4	140	2.8	1600	0	0.5	6.2	0.26	5.94
7/7	320	5.0	1549	12	0.5	6.2	0.62	5.46
7/9	360	2.7	2380	11	0.5	6.2	0.45	5.64
7/11	180	1.7	1441	17	0.5	6.2	0.38	5.24
7/14	228	2.8	1581	11	0.5	6.2	0.43	5.50
7/18	340	6.5	782	13	0.5	6.2	1.31	4.99
7/21	315	3.7	1921	10	0.5	6.2	0.49	5.61
7/23	315	3.7	1000	9	0.5	6.2	0.95	5.39
7/25	308	8.0	1200	11	0.5	6.2	0.77	5.38
7/30	280	12.0	1423	0	0.5	6.2	0.59	5.94
8/1	305	9.0	1435	7	0.5	6.2	0.64	5.64
8/4	260	8.0	810	36	0.5	6.2	0.96	3.94
8/6	240	5.0	820	0	0.5	6.2	0.88	5.93
8/8	250	7.0	880	28	0.5	6.2	0.85	4.36
8/11	188	5.0	950	20	0.5	6.2	0.59	4.79
8/13	250	3.2	810	32	0.195	6.2	0.93	6.87
8/15	288	0.1	1000	35	0.2	6.2	0.87	7.24
8/18	350	6.5	1330	200	0.0	6.2	0.79	3.19
8/20	315	3.7	1000	28	0.00	6.2	0.95	17.11
8/22	315	3.7	1160	90	0.00	6.2	0.82	6.17
8/25	308	8.0	1248	92	0.0	6.2	0.74	6.50
8/27	255	5.0	918	122	0.0	6.2	0.84	3.60
8/29	268	4.0	982	250	0.00	6.2	0.82	1.80
N	25	25	25	25	25	25	25	25
$\bar{x}$	265.9	4.9	1231.2	35.5	0.36	6.2	0.73	5.64
σ	74.5	2.67	379.8	45.1	0.22	0.0	0.22	2.62
C.V.%	28.0	54.5	30.9	127.0	61.1	0.0	30.7	46.4

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TABLE A-78. TOC DATA FOR 2 DAY ACROLEIN, ACRYLONITRILE AND DICHLOROPROPANE UNIT

Chemical Compound: Combined, Control, Acrolein, Acrylonitrile, Dichloropropane θ_c = 2 days

Parameter: TOC Volume of Reactor = 3.05 liters

Date	S_i mg/l	S_e mg/l	X mg/l	X_e mg/l	F_w l/day	F ml/min	F/M	θ_c days
6/30 /80	166	33	480	40	1.0	6.2	1.01	2.13
7/2	174	31	810	88	1.0	6.2	0.63	1.95
7/4	80	17	800	0	1.0	6.2	0.29	3.05
7/7	195	5	611	96	1.0	6.2	0.93	1.68
7/9	221	28	820	119	1.0	6.2	0.79	1.74
7/11	116	21	601	61	1.0	6.2	0.56	2.00
7/14	184	23	667	41	1.0	6.2	0.81	2.31
7/18	194	32	1706	67	1.0	6.2	0.33	2.53
7/23	212	17	1150	40	1.5	6.2	0.54	1.83
7/25	231	7	1121	22	1.0	6.2	0.60	2.77
7/28	231	4	920	22	1.0	6.2	0.73	2.71
7/30	232	13	722	18	1.5	6.2	0.94	1.89
8/1	214	5	821	18	1.5	6.2	0.76	1.90
8/4	180	27	700	60	1.5	6.2	0.75	1.60
8/6	156	15	540	0	1.5	6.2	0.85	2.03
8/8	173	21	800	20	1.5	6.2	0.61	1.89
8/11	173	21	320	18	1.5	15.0	3.83	1.35
8/13	180	3	460	38	0.6	6.2	1.15	2.71
8/15	205	27	520	25	0.6	6.2	1.15	3.51
8/18	250	27	320	20	1.5	6.2	2.29	1.70
8/20	211	21	520	60	0.0	6.2	1.19	4.26
8/22	218	3	491	20	1.5	6.2	1.30	1.80
8/25	280	36	652	53	1.2	6.2	1.26	1.90
8/27	230	26	589	41	1.5	6.2	1.14	1.67
8/29	216	37	520	62	1.5	6.2	1.22	1.48
N	25	25	25	25	25	24	25	25
$\bar{x}$	196.9	20.1	707.6	42.0	1.3	6.55	1.03	2.18
σ	40.9	10.6	290.0	28.9	0.38	1.72	0.69	0.67
C.V.%	20.8	52.7	41.0	68.8	29.2	26.3	67.5	30.5

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TABLE A-79. TOC DATA FOR 4 DAY ACROLEIN, ACRYLONITRILE AND DICHLOROPROPANE UNIT

Chemical Compound: Combined, Control, Acrolein Acrylonitrile, Dichloropropane

θ_c = 4 days

Parameter: TOC

Volume of Reactor = 3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
6/30/80	166	23	1280	16	0.75	6.2	0.38	3.73
7/2	174	12	1150	12	0.75	6.2	0.44	3.78
7/4	80	16	1200	16	0.75	6.2	0.20	3.71
7/7	195	2	820	32	0.75	6.2	0.70	3.17
7/9	221	22	1650	36	0.75	6.2	0.39	3.51
7/11	116	21	849	39	0.75	6.2	0.40	3.05
7/14	184	15	1252	28	0.75	6.2	0.43	3.50
7/18	194	29	1391	26	0.75	6.2	0.41	3.58
7/23	212	5	1350	22	0.75	6.2	0.46	3.64
7/25	231	25	1240	8	0.75	6.2	0.55	3.88
7/28	231	0	1420	8	0.75	6.2	0.48	3.91
7/30	232	6	1147	9	0.75	6.2	0.59	3.85
8/1	214	1	1345	9	0.75	6.2	0.47	3.88
8/4	180	19	840	48	0.75	6.2	0.63	2.87
8/6	156	16	900	0	0.75	6.2	0.51	4.06
8/8	173	14	280	12	0.75	6.2	0.81	3.10
8/11	173	14	710	20	0.75	6.2	0.71	3.38
8/13	180	84	480	48	0.35	6.2	1.10	3.43
8/15	205	26	1090	10	0.3	6.2	0.55	8.61
8/18	250	26	1492	0	0.75	6.2	0.49	4.06
8/20	211	22	1090	38	0.75	6.2	0.57	3.24
8/22	218	5	1540	15	0.75	6.2	0.41	3.80
8/25	280	18	1521	46	0.6	6.2	0.54	3.96
8/27	230	16	1411	38	0.75	6.2	0.48	3.40
8/29	216	24	1400	50	0.75	6.2	0.45	3.23
N	25	25	25	25	25	25	25	25
$\bar{x}$	196.9	18.5	1153.9	23.5	0.71	6.2	0.52	3.77
σ	40.9	15.7	334.7	15.5	0.12	0.0	0.16	1.04
C.V.%	20.8	84.9	29.0	166.9	65.9	0.0	3.15	27.6

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TABLE A-80. TOC DATA FOR 6 DAY ACROLEIN, ACRYLONITRILE AND DICHLOROPROPANE UNIT

Chemical Compound: Combined, Control, Acrolein Acrylonitrile, Dichloropropane

θ_c = 6 days

Parameter: TOC

Volume of Reactor = 2.97 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
6/30/80	166	23	1110	28	0.5	6.2	0.45	4.61
7/2	174	12	1450	54	0.5	6.2	0.36	4.17
7/4	80	14	1600	0	0.5	6.2	0.15	5.94
7/7	195	4	1549	12	0.5	6.2	0.38	5.46
7/9	221	22	2380	11	0.5	6.2	0.28	5.64
7/11	116	17	1441	17	0.5	6.2	0.24	5.24
7/14	184	17	1581	11	0.5	6.2	0.35	5.50
7/18	194	23	782	13	0.5	6.2	0.75	4.99
7/23	212	4	1000	9	0.5	6.2	0.64	5.39
7/25	231	0	1200	11	0.5	6.2	0.58	5.38
7/30	232	10	1423	0	0.5	6.2	0.49	5.94
8/1	214	0	1435	7	0.5	6.2	0.45	5.63
8/4	180	23	810	36	0.5	6.2	0.67	3.94
8/6	156	16	820	0	0.5	6.2	0.57	5.93
8/8	173	6	880	28	0.5	6.2	0.59	4.36
8/11	173	6	950	20	0.5	6.2	0.55	4.79
8/13	180	8	810	32	0.2	6.2	0.67	6.87
8/15	205	23	1000	35	0.2	6.2	0.62	7.24
8/18	250	52	1336	200	0.0	6.2	0.56	3.20
8/20	211	12	1000	28	0.0	6.2	0.63	17.11
8/22	218	5	1160	90	0.0	6.2	0.56	6.17
8/25	280	29	1248	92	0.0	6.2	0.67	6.50
8/27	230	17	918	122	0.0	6.2	0.75	3.60
8/29	216	29	982	250	0.0	6.2	0.66	1.88
N	24	24	24	25	25	24	24	24
$\bar{x}$	195.5	15.6	1202.7	46.1	0.39	6.2	0.53	5.65
σ	41.1	11.4	360.4	62.4	0.19	0.0	0.16	2.67
C.V.%	21.0	73.1	30.0	135.4	48.7	0.0	29.9	47.2

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TABLE A-81. COD DATA FOR 2 DAY ACROLEIN, ACRYLONITRILE AND DICHLOROPROPANE UNIT

Chemical Compound: Combined: Control, Acrolein, Acrylonitrile, Drichlorpropane θ_c = 2 days
Parameter: COD Volume of Reactor = 3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
7/18/80	580	83	1706	67	1.0	6.2	1.00	2.53
7/30	489	50	722	18	1.5	6.2	1.98	1.89
8/8	600	43	830	20	1.5	6.2	2.12	1.89
8/22	590	37	491	20	1.5	6.2	3.52	1.80
N	4	4	4	4	4	4	4	4
$\bar{x}$	564.75	53.3	937.3	31.3	1.38	6.2	2.16	2.03
σ	44.5	17.9	462.5	20.8	0.22	0.0	0.90	0.29
C.V.%	7.88	33.5	49.3	66.4	15.9	0.0	41.6	14.4

TABLE A-82. COD DATA FOR 4 DAY ACROLEIN, ACRYLONITRILE AND DICHLOROPROPANE UNIT

Chemical Compound: Combined: Acrolein, Acrylonitrile Dichlorpropane θ_c = 4 days
Parameter: COD Volume of Reactor = 3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
7/18/80	580	79	1391	26	0.75	6.2	1.22	3.58
7/30	489	62	1147	9	0.75	6.2	1.25	3.85
8/8	600	90	280	12	0.75	6.2	6.27	3.10
8/22	590	50	1540	15	0.75	6.2	1.12	3.80
N	4	4	4	4	4	4	4	4
$\bar{x}$	564.75	70.3	1089.5	15.5	0.75	6.2	2.47	3.58
σ	44.5	15.44	490.2	7.4	0	0	2.20	0.30
C.V.%	7.88	21.96	45.0	47.7	0	0	89.1	8.0

TABLE A-83. COD DATA FOR 6 DAY ACROLEIN, ACRYLONITROLE AND DICHLOROPROPANE UNIT

Chemical Compound: Combined: Acrolein, Acrylonitrile, Dichloropropane θ_c = 6 days

Parameter: COD Volume of Reactor = 2.97 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
7/18/80	580	67	782	13	0.50	6.2	2.23	4.99
7/30	489	80	1423	0	0.5	6.2	1.03	5.94
8/8	600	75	880	28	0.5	6.2	2.05	4.36
8/22	590	37	1160	90	0	6.2	1.53	6.17
N	4	4	4	4	4	4	4	4
$\bar{x}$	564.75	64.8	1061.3	15.5	0.38	6.2	1.71	5.36
σ	44.5	16.8	251.9	7.4	0.22	0	0.47	0.73
C.V.%	7.88	25.9	23.7	47.7	57.9	0	27.4	13.6

TABLE A-84. BOD_5 DATA FOR 2 DAY BENZENE UNIT

Chemical Compound: Benzene θ_c = 2 days

Parameter: BOD_5 Volume of Reactor = 3.13 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
9/29/80	246	2.0	544	16	1.4	6.8	1.41	1.84
10/1	277	3.2	412	0	1.4	5.8	1.79	2.16
10/3	176	1.9	648	16	1.4	7.0	0.86	1.94
10/6	62	1.8	540	8	1.5	6.2	0.33	1.94
10/8	212	1.6	540	0	1.4	6.4	1.16	2.16
10/10	85	1.7	470	2	1.5	6.4	0.53	2.04
10/13	224	2.6	280	0	1.4	6.2	2.28	2.16
10/15	212	2.4	550	8	1.4	6.2	1.10	2.07
10/17	178	1.3	584	32	1.4	6.3	0.89	1.72
10/20	181	0.9	390	0	1.5	6.3	1.35	2.09
10/22	231	4.6	490	46	1.1	6.6	1.43	1.62
10/24	182	1.4	600	0	1.5	6.6	0.92	2.09
10/27	224	1.3	515	20	1.2	6.4	1.29	2.00
10/29	238	1.5	430	0	1.5	6.3	1.60	2.09
10/31	232	1.9	525	2	1.5	6.0	1.21	2.05
11/3	223	1.8	620	1	1.5	6.4	1.06	2.07
11/5	256	2.6	670	18	1.5	6.2	1.10	1.84
11/7	175	1.5	600	3	1.5	5.7	0.76	2.04
11/10	222	1.1	515	8	1.4	6.3	1.26	1.99
11/12	207	1.7	530	0	1.5	5.9	1.06	2.09
11/14	271	1.8	510	0	1.5	6.4	1.56	2.09
11/8	127	1.1	630	4	1.5	6.6	0.61	2.02
11/9	230	1.2	590	2	1.5	6.2	1.11	2.05
11/17	230	0	710	3	1.5	6.2	0.92	2.04
11/19	250	1.0	580	4	1.5	6.2	1.23	2.02
11/21	254	1.5	570	3	1.5	6.2	1.28	2.03
11/16	230	2.8	640	3	1.5	6.5	1.07	2.04
11/24	193	0.7	750	0	1.5	6.6	0.78	2.09
11/26	220	0.9	640	0	1.5	6.2	0.98	2.09
11/28	183	0.9	660	8	1.5	6.4	0.82	1.96
N	30	30	30	30	30	30	30	30
$\bar{x}$	207.7	1.69	557.8	5.57	1.46	6.33	1.13	2.01
σ	48.02	0.86	97.23	7.53	0.08	0.27	0.38	0.12
C.V.%	23.12	50.65	17.43	135.3	5.35	4.21	33.67	5.98

TABLE A-85. BOD_5 DATA FOR 4 DAY BENZENE UNIT

Chemical Compound: Benzene

Parameter: BOD_5

θ_c = 4 days

Volume of Reactor = 3.14 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
9/29/80	246	1.8	716	28	0.74	5.5	0.86	3.08
10/1	277	4.9	572	2	0.70	5.4	1.20	4.33
10/3	176	2.3	552	24	0.70	5.7	0.84	3.06
10/6	62	1.8	550	8	0.75	6.0	0.31	3.63
10/8	212	4.9	480	4	0.75	6.2	1.26	3.84
10/13	224	2.2	548	4	0.7	6.3	1.18	4.13
10/15	212	1.5	700	16	0.65	6.1	0.85	3.76
10/17	178	3.0	796	32	0.55	6.2	0.64	3.53
10/20	181	0.1	790	9	0.65	6.3	0.66	4.2
10/22	231	1.4	910	4	0.69	5.9	0.69	4.34
10/24	182	1.2	910	0	0.75	6.6	0.61	4.19
10/27	224	1.0	1135	24	0.66	6.3	0.57	3.75
10/29	238	2.0	930	0	0.75	6.4	0.75	4.19
10/31	232	0.6	785	0	0.75	6.3	0.85	4.19
11/3	223	2.0	1030	5	0.75	6.5	0.65	3.97
11/5	256	1.2	1020	18	0.70	6.5	0.75	3.68
11/7	175	2.0	1010	2	0.75	6.0	0.48	4.10
11/10	222	1.1	965	12	0.5	6.6	0.70	5.13
10/12	207	0.7	960	1	0.75	6.1	0.60	4.14
11/14	271	2.6	890	0	0.75	6.6	0.92	4.19
11/8	127	1.9	1040	4	0.75	6.2	0.35	4.02
11/9	230	1.6	910	3	0.75	6.4	0.74	4.04
11/17	230	1.0	930	4	0.75	6.4	0.73	3.99
11/19	250	0.7	1015	6	0.75	5.9	0.67	3.95
11/21	254	1.4	830	2	0.75	6.2	0.88	4.08
11/16	230	1.2	1010	0	0.75	5.3	0.55	4.19
11/24	193	0.8	1000	0	0.75	5.5	0.49	4.19
11/26	220	1.0	980	0	0.75	6.0	0.62	4.19
11/28	180	1.0	1000	7	0.75	6.2	0.51	3.89
N	29	29	29	29	29	29	29	29
$\bar{x}$	211.83	1.69	860.83	7.55	0.72	6.13	0.72	4.0
σ	43.1	1.08	173.4	9.08	0.06	0.36	0.22	0.38
C.V.%	20.34	63.9	20.49	120.22	8.52	5.81	30.91	9.49

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TABLE A-86. BOD_5 DATA FOR 6 DAY BENZENE UNIT

Chemical Compound: Benzene

Parameter: BOD_5

θ_c = 6 days

Volume of Reactor = 3.04 liters

Date	Si mg/1	Se mg/1	X mg/1	Xe mg/1	Fw 1/day	F ml/min	F/M	θ_c days
10/8/80	212	1.5	780	0	0.45	6.3	0.81	6.76
10/10	85	1.9	820	4	0.4	6.3	0.31	6.87
10/13	224	1.0	1168	0	0.4	6.4	0.58	7.60
11/15	212	2.1	1130	4	0.375	6.2	0.55	7.5
11/17	178	1.1	1268	28	0.40	6.4	0.43	5.11
11/20	181	0.6	1310	0	0.45	6.2	0.41	6.76
10.22	231	2.1	1400	2	0.4	6.5	0.51	7.36
10/24	182	1.4	1340	0	0.5	6.3	0.41	6.08
10/27	224	1.8	1310	0	0.4	6.4	0.52	7.60
10/29	238	2.8	1230	4	0.5	6.3	0.58	5.76
10/31	232	0.7	1295	16	0.5	6.0	0.51	5.06
11/3	223	0.8	1280	33	0.2	6.4	0.53	7.03
11/5	256	1.6	1400	24	0.47	6.4	0.55	4.90
11/7	175	1.0	1220	74	0	6.4	0.43	5.44
11/12	207	3.7	980	46	0.15	6.1	0.61	5.47
11/14	271	2.1	970	44	0.10	6.2	0.83	6.04
11/9	230	1.1	1100	26	0.45	6.1	0.60	4.70
11/17	230	0.7	1090	12	0.38	6.2	0.61	6.42
11/19	250	1.0	1160	30	0.35	6.1	0.62	5.35
11/21	254	1.3	1180	14	0.42	6.4	0.65	5.80
11/16	230	1.2	1150	16	0.275	6.2	0.59	7.69
11/24	193	0.8	1270	18	0.375	6.5	0.47	6.05
11/26	220	1.0	1290	10	0.430	6.0	0.48	6.16
11/28	183	1.5	1320	48	0.250	6.3	0.41	5.33
N	24	24	24	24	24	24	24	24
$\bar{x}$	213.38	1.45	1185.88	18.88	0.36	6.28	0.54	6.20
σ	37.24	0.72	161.21	18.99	0.13	0.14	0.12	0.92
C.V.%	17.45	49.5	13.59	100.6	35.85	2.28	21.86	14.9

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TABLE A-87. TOC DATA FOR 2 DAY BENZENE UNIT

Chemical Compound: Benzene
Parameter: TOC
θ_c = 2 days
Volume of Reactor = 3.13 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
9/29/80	192	18	544	16	1.4	6.8	1.11	1.85
10/1	106	20	412	0	1.4	5.8	0.69	2.15
10/3	117	19	648	16	1.4	7.0	0.58	1.94
10/6	36	10	540	8	1.5	6.2	0.19	1.94
10/8	145	14	540	0	1.4	6.4	0.79	2.16
10/10	93	10	470	2	1.5	6.4	0.58	2.04
10/13	60	3	280	0	1.4	6.2	0.61	2.16
10/15	102	16	550	8	1.4	6.2	0.53	2.07
10/17	94	16	584	32	1.4	6.3	0.47	1.72
10/20	29	0	390	0	1.5	6.3	0.22	2.09
11/22	132	19	490	46	1.1	6.6	0.82	1.62
10/24	140	13	600	0	1.5	6.6	0.71	2.09
10/27	173	6	515	20	1.2	6.4	1.00	2.00
10/29	179	20	430	0	1.5	6.3	1.21	2.09
10/31	169	18	525	2	1.5	6.0	0.89	2.05
11/3	79	12	620	1	1.5	6.4	0.38	2.07
11/5	140	12	670	18	1.5	6.2	0.60	1.84
11/7	142	8	600	3	1.5	5.7	0.62	2.04
11/10	174	22	515	8	1.4	6.3	0.99	1.99
10/12	149	20	530	0	1.5	5.9	0.76	2.09
11/14	138	14	510	0	1.5	6.4	0.80	2.09
11/8	145	19	630	4	1.5	6.6	0.70	2.02
11/9	168	19	590	2	1.5	6.2	0.81	2.05
11/17	128	8	710	3	1.5	6.2	0.51	2.04
11/19	186	18	580	4	1.5	6.2	0.91	2.02
11/21	194	7	570	3	1.5	6.2	0.98	2.03
11/16	125	12	640	3	1.5	6.5	0.58	2.04
11/24	140	13	750	0	1.5	6.6	0.57	2.09
11/26	137	4	640	0	1.5	6.2	0.61	2.09
11/28	137	1	660	8	1.5	6.4	0.61	1.96
N	30	30	30	30	30	30	30	30
$\bar{x}$	131.67	13.12	557.77	8.20	1.46	6.32	0.69	2.08
σ	41.77	6.03	96.93	10.73	0.08	0.27	0.23	0.35
C.V.%	31.72	45.95	17.38	130.88	5.35	4.2	33.67	17.04

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TABLE A-88. TOC DATA FOR 4 DAY BENZENE UNIT

Chemical Compound: Benzene θ_c = 4 days

Parameter: TOC Volume of Reactor = 3.14 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
9/29/80	192	14	716	28	0.74	5.5	0.68	3.08
10/1	106	34	572	2	0.7	5.4	0.46	4.33
10/3	117	23	552	24	0.7	5.7	0.55	3.06
10/6	36	19	550	8	0.75	6.0	0.19	3.63
10/8	145	19	480	4	0.75	6.2	0.86	3.84
10/13	60	7	548	4	0.7	6.3	0.32	4.13
10/15	102	15	700	16	0.65	6.1	0.41	3.76
10/17	94	20	796	32	0.55	6.2	0.34	3.53
10/20	29	27	790	9	0.65	6.3	0.11	4.2
10/22	132	17	910	4	0.69	5.9	0.39	4.34
10/24	140	4	910	0	0.75	6.6	0.47	4.19
10/27	173	18	1135	24	0.66	6.3	0.44	3.75
10/29	179	20	930	0	0.75	6.4	0.56	4.19
10/31	167	16	785	0	0.75	6.3	0.61	4.19
11/3	79	19	1030	5	0.75	6.5	0.23	3.97
11/5	140	10	1020	18	0.7	6.5	0.41	3.68
11/7	142	8	1010	2	0.75	6.0	0.39	4.1
11/10	174	21	965	12	0.5	6.6	0.55	5.13
11/12	149	17	960	1	0.75	6.1	0.43	4.14
11/14	138	18	890	0	0.75	6.6	0.47	4.19
11/8	145	19	1040	4	0.75	6.2	0.40	4.02
11/	168	19	910	3	0.75	6.4	0.54	4.04
11/17	128	9	930	4	0.75	6.4	0.40	3.99
11/19	186	19	1015	6	0.75	5.9	0.50	3.95
11/21	194	2	830	2	0.75	6.2	0.67	4.08
11/16	125	1	1010	0	0.75	5.3	0.30	4.19
11/24	140	4	1000	0	0.75	5.5	0.35	4.19
11/26	137	6	980	0	0.75	6.0	0.38	4.19
11/28	137	2	1000	7	0.75	6.0	0.38	3.89
N	29	29	29	29	29	29	29	29
$\bar{x}$	132.93	14.81	860.83	7.55	0.74	6.11	0.44	4.00
σ	42.54	7.82	176.42	9.08	0.12	0.37	0.15	0.38
C.V.%	32.0	52.80	20.5	120.22	16.28	6.06	34.17	9.52

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TABLE A-89. TOC DATA FOR 6 DAY BENZENE UNIT

Chemical Compound: Benzene θ_c = 6 days

Parameter: TOC Volume of Reactor = 3.04 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
9/29/80	192	16	772	28	0.42	5.6	0.66	4.36
10/3	117	13	556	32	0.15	7.0	0.69	4.21
10/8	145	11	780	0	0.45	6.3	0.55	6.76
10/10	93	11	820	4	0.4	6.3	0.34	6.87
10/13	60	2	1168	0	0.4	6.4	0.16	7.6
10/15	102	8	1130	4	0.37	6.2	0.27	7.5
10/17	94	4	1268	28	0.40	6.4	0.22	5.11
10/20	29	14	1310	0	0.45	6.2	0.07	6.76
10/22	132	12	1400	2	0.4	6.5	0.29	7.36
10/24	140	--	1340	0	0.5	6.3	0.31	6.08
10/27	173	5	1310	0	0.4	6.4	0.40	7.6
10/29	179	1	1230	4	0.5	6.3	0.43	5.76
10/31	167	2	1295	16	0.5	6.0	0.37	5.06
11/3	79	4	1280	33	0.2	6.4	0.19	7.03
11/5	140	6	1400	24	0.4	6.4	0.30	4.90
11/7	142	3	1220	74	0.0	6.4	0.35	5.44
11/12	149	6	980	46	0.15	6.1	0.44	5.47
11/14	138	10	970	44	0.10	6.2	0.42	6.04
11/8	145	5	1420	68	0.25	6.4	0.31	4.47
11/9	168	8	1100	26	0.45	6.1	0.44	4.70
11/17	128	1	1090	12	0.38	6.1	0.34	6.42
11/19	186	7	1160	30	0.35	6.1	0.46	5.35
11/21	194	0	1180	14	0.42	6.4	0.50	5.8
11/16	125	0	1150	16	0.27	6.2	0.32	7.69
11/24	140	--	1270	18	0.37	6.5	0.34	6.05
11/26	137	2	1290	10	0.43	6.0	0.30	6.16
11/28	137	4	1320	48	0.25	6.3	0.31	5.33
N	27	25	27	27	27	27	27	27
$\bar{x}$	134.5	8.44	1155.9	21.52	0.35	6.27	0.26	6.0
σ	36.68	15.31	212.58	20.28	0.13	0.23	0.13	1.05
C.V.%	28.76	181.39	18.39	94.25	37.11	3.73	51.83	17.46

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TABLE A-90. COD DATA FOR 2 DAY BENZENE UNIT

Chemical Compound: Benzene
θ_c = 2 days
Parameter: COD
Volume of Reactor = 3.13 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
10/3/80	442	31.9	544	16	1.45	6.8	2.55	1.85
10/17	460	16	584	32	1.4	6.35	2.30	1.72
10/24	425	28	600	0	1.5	6.6	2.15	2.09
10/31	391	28	525	2	1.5	6.0	2.06	2.05
11/7	360	28	600	3	1.5	5.7	1.57	2.04
10/14	412	43	510	0	1.5	6.4	2.38	2.09
11/19	416	33	580	4	1.5	6.2	2.05	2.02
11/21	588	18	570	3	1.5	6.25	2.97	2.03
11/28	474	11.5	660	8	1.5	6.4	2.11	1.96
N	9	9	9	9	9	9	9	9
$\bar{x}$	440.89	26.38	574.8	7.56	1.48	6.30	2.24	1.98
σ	61.33	9.18	42.55	9.82	0.03	0.30	0.36	0.12
C.V.%	13.91	34.79	7.40	130.0	2.25	4.81	16.3	5.87

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TABLE A-91. COD DATA FOR 4 DAY BENZENE UNIT

Chemical Compound: Benzene — θ_c = 4 days

Parameter: COD — Volume of Reactor = 3.14 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
10/3/80	442	47	552	24	0.7	5.7	2.09	3.06
10/17	460	24	796	32	0.55	6.2	1.66	3.53
10/24	425	24	910	0	0.75	6.6	1.41	4.19
10/31	391	20	785	0	0.75	6.3	1.44	4.19
11/7	360	20	1010	2	0.75	6.0	0.98	4.10
11/14	412	58	890	0	0.75	6.6	1.40	4.19
11/19	416	33	1015	6	.75	5.9	1.11	3.95
11/21	588	33	830	2	.75	6.2	2.03	4.08
11/28	474	11	1000	7	.7	6.0	1.30	3.89
N	9	9	9	9	9	9	9	9
$\bar{x}$	440.9	30.14	865.33	8.11	0.72	6.18	1.49	3.91
σ	61.33	13.88	139.4	11.06	0.06	0.29	0.36	0.36
C.V.%	13.91	46.05	16.11	136.4	8.66	4.67	23.87	9.22

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TABLE A-92. COD DATA FOR 6 DAY BENZENE UNIT

Chemical Compound: Benzene
Parameter: COD
θ_c = 6 days
Volume of Reactor = 3.04 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
10/ 3/80	442	15	556	32	0.1	7.0	1.02	2.30
10/10	460	16	1268	28	0.4	6.4	1.10	5.11
10/24	425	22	1340	0	0.5	6.3	0.95	6.08
10/31	391	28	1295	16	0.5	6.0	0.86	5.06
11/7	360	12	1200	74	0.0	6.4	0.91	5.35
11/14	412	50	970	44	0.1	6.25	1.26	6.04
11/19	416	33	1160	30	0.3	6.10	1.04	5.35
11/21	588	29	1180	14	0.4	6.40	1.51	5.80
11/28	474	23	1320	48	0.2	6.30	1.07	5.33
N	9	9	9	9	9	9	9	9
$\bar{x}$	440.9	25.43	1143.2	31.78	0.30	6.35	1.08	5.16
σ	61.33	10.85	232.97	20.52	0.17	0.26	0.19	1.07
C.V.%	13.91	42.65	20.38	64.56	56.86	4.17	17.4	20.76

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TABLE A-93. BOD_5 DATA FOR 2 DAY METHYLENE CHLORIDE UNIT

Chemical Compound: Methylene Chloride θ_c = 2 days

Parameter: BOD_5 Volume of Reactor = 3.06 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
9/29/80	210	7.4	656	--	1.5	6.4	0.96	--
10/1	315	15.8	660	28	1.5	6.2	1.40	1.69
10/3	282	4.1	600	26	1.5	5.8	1.28	1.70
10/6	285	1.2	648	--	1.5	6.2	1.28	--
10/8	225	2.6	496	64	1.5	6.2	1.32	1.24
10/10	204	0.8	836	40	0.8	6.4	0.73	2.54
10/15	260	1.5	652	136	0.8	6.2	1.16	1.23
10/17	306	0.9	524	122	0.8	6.0	1.65	1.17
10/20	273	13.8	644	36	0.89	6.1	1.22	2.30
10/22	306	2.0	572	76	0.30	6.4	1.61	2.06
10/24	303	2.6	656	60	0.65	6.0	1.30	2.22
10/27	332	2.9	864	4	1.35	6.3	1.14	2.21
10/29	288	0.9	892	72	1.20	6.3	0.96	1.67
10/31	318	1.6	904	2	1.36	5.7	0.94	2.23
11/3	318	4.4	1148	10	1.35	6.3	0.82	2.16
11/5	241	3.1	328	2	1.0	6.2	2.15	2.92
11/7	291	3.7	436	138	0.0	6.2	1.95	1.08
11/10	278	4.2	488	32	0.86	6.0	1.61	2.23
11/12	327	0.8	616	72	0.39	6.5	1.62	2.13
11/14	301	1.3	505	8	1.08	6.2	1.74	2.53
11/17	286	1.3	732	20	1.27	6.2	1.14	2.07
11/19	312	1.0	1000	14	1.40	6.4	0.94	2.03
11/21	310	2.3	740	26	1.20	6.0	1.18	2.09
11/24	291	1.2	892	22	1.3	6.4	0.98	2.05
11/25	302	0	844	6	1.3	6.2	1.05	2.18
11/26	294	2.1	912	24	1.3	6.0	0.91	2.05
11/27	276	1.8	1220	12	1.4	6.1	0.65	2.08
11/28	304	0.5	696	26	0.8	6.7	1.38	2.51
N	28	28	28	26	28	28	28	25
$\bar{x}$	287	3.09	720	41.5	1.09	6.2	1.25	2.05
σ	32.4	3.60	206	39.4	3.94	0.207	0.35	0.42
C.V.%	11.3	116	28.6	94.9	361	3.3	28.3	20.5

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TABLE A-94. BOD$_5$ DATA FOR 4 DAY METHYLENE CHLORIDE UNIT

Chemical Compound: Methylene Chloride θ_c = 4 days

Parameter: BOD$_5$ Volume of Reactor = 3.08 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
9/29/80	210	1.3	1432	22	0.75	6.8	0.46	3.46
10/1	315	1.8	1188	20	0.75	6.3	0.78	3.46
10/3	282	1.12	1096	10	0.75	5.8	0.69	3.76
10/6	285	1.35	1004	22	0.55	6.1	0.81	4.22
10/8	225	1.0	988	24	0.60	6.2	0.66	3.84
10/10	204	0.46	992	40	0.50	6.2	0.60	3.67
10/13	321	1.29	1224	10	0.5	5.7	0.70	5.47
10/15	260	1.38	1044	64	0.5	6.0	0.70	3.08
10/17	306	0.0	988	48	0.4	6.4	0.93	3.72
10/27	332	2.61	764	10	0.60	6.3	1.28	4.33
10/29	288	1.83	876	34	0.25	6.3	0.97	5.20
11/7	291	0.93	752	6	0.71	6.0	1.09	3.98
11/10	278	0.83	612	26	0.22	6.4	1.36	5.11
11/12	327	0.6	472	16	0.4	6.4	2.07	4.41
11/14	301	1.44	858	2	0.67	6.3	1.04	4.47
11/17	286	.52	984	24	0.48	6.0	0.82	4.54
11/19	312	1.65	934	54	0.21	6.2	0.97	4.31
11/21	310	4.02	928	78	0.0	6.2	0.97	4.10
11/24	291	0.9	1108	12	0.66	6.4	0.79	4.09
11/25	302	0.08	1152	2	0.7	6.0	0.74	4.32
11/26	294	1.28	1076	0	0.7	6.0	0.77	4.40
11/27	276	0.83	1092	8	0.7	6.0	0.71	4.06
11/28	304	0.67	1076	6	0.59	6.0	0.79	4.82
N	23	23	23	23	23	23	23	22
$\bar{x}$	287	1.21	984	23.4	0.53	6.17	0.900	4.22
σ	33.3	0.83	200.5	20.4	0.19	0.23	.322	.578
C.V.%	11.6	68.7	20.4	87.4	36.9	3.7	35.8	13.7

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TABLE A-95. BOD$_5$ DATA FOR 6 DAY METHYLENE CHLORIDE UNIT

Chemical Compound: Methylene Chloride θ_c = 6 days

Parameter: BOD$_5$ Volume of Reactor = 3.1 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
9/29/80	210	1.65	2008	0	0.5	6.8	0.32	6.20
10/1	315	1.8	1820	8	0.5	6.4	0.52	5.70
10/3	282	1.3	1988	6	0.5	6.1	0.40	5.90
10/6	285	1.9	1596	18	0.5	6.3	0.52	5.20
10/8	225	1.8	1484	0	0.5	6.3	0.44	6.20
10/10	204	0.63	1388	24	0.4	6.8	0.46	5.50
10/13	321	1.42	1272	12	0.4	6.0	0.70	6.49
10/15	260	1.4	1180	6	0.5	6.4	0.66	5.70
10/17	306	0.9	968	22	0.4	6.4	0.94	5.16
10/20	273	5.73	1128	4	0.4	6.4	0.72	7.19
10/31	318	2.0	1232	0	0.5	6.2	0.74	6.20
11/7	291	6.06	628	8	0.38	6.3	1.36	6.32
11/10	278	1.45	1224	30	0.22	6.1	0.64	7.21
11/12	327	0.9	1040	12	0.34	6.5	0.95	6.98
11/14	301	0.79	813	0	0.50	6.4	1.10	6.20
11/24	291	1.88	1024	64	0.0	5.6	0.74	6.15
11/26	294	3.68	936	50	0.0	5.9	0.86	6.07
11/27	276	2.7	896	64	0.0	6.1	0.87	4.94
N	18	18	18	18	18	18	18	18
$\bar{x}$	281.04	2.11	1258.06	18.22	0.37	6.28	0.72	6.08
σ	35.21	1.51	382.5	20.38	0.17	0.28	0.26	0.63
C.V.%	12.53	71.5	30.40	111.85	46.38	4.51	35.63	10.3

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TABLE A-96. TOC DATA FOR 2 DAY METHYLENE CHLORIDE UNIT

Chemical Compound: Methylene Chloride θ_c = days

Parameter: TOC Volume of Reactor = 3.06 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
9/29/80	118	27	656	--	1.5	6.4	0.55	--
10/1	170	9	660	28	1.5	6.2	0.75	1.69
10/3	212	38	600	26	1.5	5.8	0.96	1.70
10/6	102	15	648	--	1.5	6.2	0.42	--
10/8	189	18	496	64	1.5	6.2	1.11	1.26
10/10	189	9	836	40	0.8	6.4	.66	2.54
10/15	171	20	652	136	0.8	6.2	0.77	1.22
10/17	147	10	524	122	0.8	6.0	0.79	1.165
10/20	100	20	644	36	0.89	6.1	0.45	2.30
10/22	173	12	572	76	0.30	6.4	0.91	2.06
10/24	181	16	656	60	0.65	6.0	0.78	2.22
10/27	207	23	864	4	1.35	6.3	0.71	2.21
10/29	175	13	892	72	1.2	6.3	0.58	1.67
10/31	193	18	904	2	1.36	5.7	0.57	2.23
11/3	155	19	1148	10	1.35	6.3	0.4	2.16
11/5	169	29	328	2	1.0	6.2	1.50	2.92
11/7	196	18	436	138	0.0	6.2	1.31	1.08
11/10	200	25	488	32	0.86	6.0	1.16	2.23
11/12	142	39	616	72	0.39	6.5	0.71	2.13
10/14	174	16	505	8	1.08	6.2	1.01	2.53
11/17	172	25	732	20	1.27	6.2	0.69	2.07
11/19	187	22	1000	14	1.40	6.4	0.56	2.03
11/21	176	8	740	26	1.20	6.0	0.67	2.09
11/24	169	35	892	22	1.3	6.4	0.57	2.05
11/25	172	7	844	6	1.35	6.2	0.59	2.18
11/26	164	0	912	24	1.3	6.0	0.51	2.05
11/27	177	10	1220	12	1.4	6.1	0.42	2.08
11/28	183	6	696	26	0.89	6.7	0.83	2.51
N	28	28	28	26	28	28	28	26
$\bar{x}$	170.23	18.29	720.04	41.46	1.09	6.2	0.75	2.01
σ	27.00	9.49	206.13	39.40	0.39	0.21	0.27	0.44
C.V.%	15.86	51.88	28.63	95.03	36.13	3.34	35.86	22.04

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TABLE A-97. TOC DATA FOR 4 DAY METHYLENE CHLORIDE UNIT

Chemical Compound: Methylene Chloride θ_c = 4 days

Parameter: TOC Volume of Reactor = 3.08 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
9/29/80	118	19	1432	22	0.75	6.8	0.26	3.46
10/1	170	19	1188	20	0.75	6.3	0.42	3.46
10/3	212	53	1096	10	0.75	5.8	0.52	3.76
10/6	102	16	1004	22	0.55	6.1	0.29	4.22
10/8	189	16	988	24	0.60	6.2	0.55	3.84
10/10	189	10	992	40	0.50	6.2	0.55	3.67
10/13	137	5	1224	10	0.5	5.7	0.30	5.47
10/15	171	18	1044	64	0.5	6.0	0.46	3.08
10/17	147	19	988	48	0.4	6.4	0.45	3.72
10/27	207	19	764	10	0.6	6.3	0.80	4.33
10/29	175	21	876	34	0.25	6.3	0.59	5.20
11/7	196	7	752	6	0.71	6.0	0.73	3.98
11/10	200	18	612	26	0.22	6.4	0.98	5.11
11/12	142	28	472	16	0.40	6.4	0.90	4.41
11/14	174	13	858	2	0.67	6.3	0.60	4.47
11/17	172	27	984	24	0.48	6.0	0.49	4.54
11/19	187	20	934	54	0.21	6.2	0.58	4.31
11/21	176	8	928	78	0.0	6.2	0.55	4.10
11/24	169	18	1108	12	0.66	6.4	0.46	4.09
11/25	172	9	1152	2	0.70	6.0	0.42	4.32
11/26	164	24	1076	0	0.70	6.0	0.43	4.4
11/27	177	14	1092	8	0.70	6.0	0.45	4.06
11/28	183	30	1076	6	0.59	6.0	0.48	4.82
N	23	23	23	23	23	23	23	23
$\bar{x}$	170.95	18.87	984.35	23.39	0.53	6.17	0.53	4.21
σ	26.11	9.69	202.50	20.44	0.20	0.23	0.18	0.57
C.V.%	15.27	51.35	20.37	87.40	37.57	3.77	33.12	13.49

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TABLE A-98. TOC DATA FOR 6 DAY METHYLENE CHLORIDE UNIT

Chemical Compound: Methylene Chloride θ_c = 6 days
Parameter: TOC Volume of Reactor = 3.1 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
9/29/80	118	22	2008	0	0.5	6.8	0.19	6.2
10/1	170	53	1820	8	0.5	6.4	0.27	5.76
10/3	212	10	1988	6	0.5	6.1	0.30	5.90
10/6	102	14	1596	18	0.5	6.3	0.19	5.2
10/8	189	5	1484	0	0.5	6.3	0.37	6.2
10/10	189	12	1388	24	0.4	6.8	0.43	5.5
10/13	137	4	1272	12	0.4	6.0	0.30	6.49
10/15	171	21	1180	6	0.5	6.4	0.43	5.70
10/17	147	22	968	22	0.4	6.4	0.45	5.16
10/20	100	11	1128	4	0.4	6.4	0.26	7.19
10/29	175	19	712	48	0.14	6.4	0.73	4.12
10/31	193	34	1232	0	0.5	6.2	0.45	6.20
11/7	196	19	628	8	0.38	6.3	0.91	6.32
11/10	200	26	1224	30	0.22	6.1	0.46	7.21
11/12	142	40	1040	12	0.34	6.5	0.41	6.98
11/14	174	16	813	0	0.50	6.4	0.64	6.20
11/24	169	24	1024	64	0	5.6	0.43	6.15
11/26	164	14	936	50	0.06	5.9	0.48	6.07
11/27	177	17	896	64	0	6.1	0.56	4.94
N	19	19	19	19	19	19	19	19
$\bar{x}$	164.61	20.39	1228.26	19.79	0.35	6.28	0.43	5.97
σ	31.39	11.61	391.73	20.95	0.17	0.28	0.18	0.75
C.V.%	19.07	56.94	31.89	105.88	49.95	4.42	41.07	12.61

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TABLE A-99. COD DATA FOR 2 DAY METHYLENE CHLORIDE UNIT

Chemical Compound: Methylene Chloride θ_c = 2 days

Parameter: COD Volume of Reactor = 3.06 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
10/3/80	530	32	600	26	1.5	5.8	2.40	1.70
10/10	388	0	836	40	0.8	6.4	1.40	2.54
10/17	411	24	524	122	0.8	6.0	2.22	1.17
10/24	440	30	656	60	0.65	6.0	1.89	2.22
10/31	486	15	904	2	1.36	5.7	1.44	2.23
11/7	487	27	436	138	0.0	6.2	3.26	1.08
11/14	528	19	505	8	1.08	6.2	3.06	2.53
11/27	532	24	1220	12	1.4	6.1	1.25	2.08
11/28	485	30	696	26	0.89	6.7	2.20	2.51
N	9	9	9	9	9	9	9	9
$\bar{x}$	476.5	22.69	708.56	48.22	0.94	6.12	2.12	2.01
σ	49.88	9.47	231.11	46.87	0.44	0.29	0.67	0.53
C.V.%	10.47	41.74	32.62	97.2	46.67	4.67	31.7	26.57

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TABLE A-10a COD DATA FOR 4 DAY METHYLENE CHLORIDE UNIT

Chemical Compound: Methylene Chloride — θ_c = 4 days
Parameter: COD — Volume of Reactor = 3.08 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
10/3/80	530	16	1096	10	0.75	5.8	1.31	3.76
10/10	388	0	992	40	0.5	6.2	1.13	3.67
10/17	411.2	20	988	48	0.4	6.4	1.25	3.72
11/7	487.1	3	752	6	0.71	6.0	1.82	3.98
11/14	528.8	58	858	2	0.67	6.3	1.82	4.47
11/27	532	16	1092	8	0.7	6.0	1.37	4.06
11/28	485	26	1076	6	0.59	6.0	1.26	4.82
N	7	7	7	7	7	7	7	7
$\bar{x}$	480.3	20.22	979.14	17.14	0.62	6.10	1.47	4.07
σ	54.83	17.81	121.43	17.34	0.12	0.19	0.26	0.40
C.V.%	11.42	88.10	12.40	101.2	19.11	3.17	17.65	9.83

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TABLE A-101. COD DATA FOR 6 DAY METHYLENE CHLORIDE UNIT

Chemical Compound: Methylene Chloride θ_c = 6 days

Parameter COD Volume of Reactor = 3.1 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
10/3/80	530	60	1988	6.0	0.5	6.1	0.75	5.9
10/6	388	54	1388	24	0.4	6.8	0.88	5.5
10/17	411.2	8.2	968	22	0.4	6.4	1.26	5.16
10/31	486.1	35.6	1232	0	0.5	6.2	1.14	6.20
11/7	487.1	43.56	628	8	0.38	6.3	2.27	6.32
11/14	528.8	70	813	0	0.5	6.4	1.93	6.20
11/27	532	39	896	64	0	6.1	1.68	4.94
N	7	7	7	7	7	7	7	7
$\bar{x}$	480.46	44.34	1130.4	17.71	0.38	6.33	1.42	5.75
σ	54.85	18.63	423.91	21.0	0.16	0.23	0.52	0.51
C.V.%	11.42	42.02	37.5	118.58	43.36	3.57	36.8	8.91

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TABLE A-102. BOD_5 DATA FOR 2 DAY ETHYL ACETATE UNIT

Chemical Compound: Ethyl Acetate θ_c = 2 days

Parameter: BOD_5 Volume of Reactor = 3.255 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
10/1/80	150	1.09	424	36	0.7	6.0	0.94	2.29
10/3	265	2.0	292	20	0.7	6.1	2.45	2.50
10/6	86	1.4	156	49	0	6.0	1.46	1.20
10/8	252	0.8	300	24	1.5	6.2	2.3	1.55
10/10	236	2.6	636	2	1.5	6.2	1.02	2.15
10/13	239	2.0	920	0	1.5	6.6	0.76	2.17
10/15	107.5	2.8	352	3	1.5	6.0	0.81	2.09
10/17	277.1	3.0	712	24	1.3	6.4	1.10	1.97
10/20	216	2.6	736	6	1.5	6.0	0.77	2.09
10/22	251	0.76	748	2	1.5	6.4	0.95	2.14
10/24	289	2.7	876	1	1.5	5.9	0.86	2.16
10/27	291	0.37	576	2	1.5	6.4	1.43	2.13
10/29	303	2.2	616	5	1.5	6.2	1.35	2.09
10/31	293	2.37	600	9	1.5	6.3	1.36	2.02
11/3	312	1.1	712	3	1.5	6.2	1.20	2.13
11/5	260	0.43	388	11	1.4	6.2	1.84	1.97
11/7	274.5	1.7	460	5	1.5	6.0	1.58	2.06
11/10	303	0.77	612	0	1.5	6.4	1.40	2.17
11/12	285	1.90	500	4	1.5	6.3	1.59	2.09
11/14	303	0.72	976	0	1.5	6.5	0.89	2.17
11/17	313.7	0.90	560	4	1.5	6.0	1.49	2.09
11/19	243.1	1.27	676	16	1.5	6.30	1.00	1.94
11/21	271	1.32	528	4	1.5	6.10	1.39	2.09
11/24	310.2	0.32	1384	2	1.5	6.4	0.63	2.15
11/26	309.6	1.75	616	34	1.1	6.25	1.39	2.12
11/28	301.9	3.72	736	216	0.0	6.3	1.14	1.22
N	26	26	26	26	26	26	26	26
$\bar{x}$	259.25	1.64	616.92	18.54	1.31	6.22	1.27	2.03
σ	59.26	0.90	246.10	41.51	0.43	0.18	0.44	0.28
C.V.%	22.86	54.85	39.90	223.87	32.85	2.88	34.5	13.83

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TABLE A-10.3. BOD_5 DATA FOR 4 DAY ETHYL ACETATE UNIT

Chemical Compound: Ethyl Acetate θ_c = 4 days

Parameter: BOD_5 Volume of Reactor = 3.065 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c day
10/1/80	150	1.57	740	54	0.375	6.1	0.58	3.10
10/8	252	0.5	588	8	0.75	6.25	1.26	3.55
10/17	277.1	2.7	432	48	0	6.3	1.90	3.04
10/22	251	0.26	384	3	0.7	6.6	2.03	3.99
10/27	291	0.13	820	1	0.75	6.3	1.05	4.03
10/29	303	1.6	892	26	0.51	6.3	1.01	4.04
11/10	303	1.0	808	4	0.74	6.4	1.13	3.92
11/12	285	1.37	778	16	0.50	6.25	1.08	4.54
11/14	303	0.80	992	28	0.50	6.4	0.92	4.11
11/17	313.7	1.70	1140	2	0.70	6.30	0.81	4.29
11/19	243.1	0.92	844	9	0.75	6.40	0.87	3.65
11/21	271	0.78	1060	5	0.75	6.10	0.73	3.89
11/24	310.2	0.46	1656	42	0.56	6.35	0.56	3.94
11/26	309.6	2.45	1392	7	0.75	6.25	0.65	3.87
11/28	301.9	1.37	1136	4	0.74	6.30	0.79	3.98
N	15	15	15	15	15	15	15	15
$\bar{x}$	277.64	1.17	910.8	17.13	0.61	6.31	1.02	3.86
σ	40.84	0.73	326.61	17.44	0.20	0.12	0.42	0.38
C.V.%	14.71	62.13	35.86	101.8	33.10	1.87	41.00	9.93

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TABLE A-104. BOD_5 DATA FOR 6 DAY ETHYL ACETATE UNIT

Chemical Compound: Ethyl Acetate
Parameter: BOD_5

θ = 6 days
Volume of Reactor = 3.129 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
9/29/80	262	1.53	1164	40	0.25	6.35	0.66	5.63
10/1	150	2.13	848	38	0.25	6.25	0.50	4.82
10/6	86	3.45	736	15	0.35	6.0	0.34	5.96
10/8	252	2.9	752	3	0.55	6.0	0.97	5.37
10/10	236	1.44	740	4	0.55	6.4	0.94	5.24
10/15	107	1.65	880	64	0	5.4	0.30	5.53
10/17	277	1.6	652	38	0.04	6.6	1.29	5.29
10/20	214	1.20	960	1	0.55	6.0	0.62	5.6
10/22	251	2.3	1156	80	0.0	6.3	0.63	4.98
10/24	289	1.5	876	32	0.24	6.0	0.91	5.72
11/5	260	1.49	728	10	0.42	6.8	1.12	5.70
11/7	274	2.55	564	6	0.36	6.3	1.41	6.84
10/10	303	1.24	936	0	0.5	6.5	0.97	6.26
11/12	285	2.2	1268	3	0.5	6.3	0.65	6.01
11/14	303	0.78	2064	0	0.5	6.4	0.43	6.25
11/19	243	0.73	980	7	0.5	6.30	0.72	5.58
11/21	271	1.20	1144	12	0.45	6.00	0.65	5.84
11/24	310	0.6	1052	2	0.5	6.25	0.85	6.06
11/26	309	1.65	972	42	0.05	6.25	0.92	7.16
N	19	19	19	19	19	19	19	19
$\bar{x}$	246.57	1.69	972.21	20.93	0.35	6.23	0.78	5.78
σ	63.27	0.72	316.76	23.04	0.19	0.29	0.29	0.57
C.V.%	25.66	42.72	32.58	110.07	55.23	4.63	37.61	9.78

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TABLE A-105. TOC DATA FOR 2 DAY ETHYL ACETATE UNIT

Chemical Compound: Ethyl Acetate θ_c = 2 days

Parameter: TOC Volume of Reactor = 3.255 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
10/1/80	149	9.0	424	36	0.75	6.0	0.93	2.29
10/3	147	12.0	292	20	0.75	6.1	1.35	2.50
10/6	73	13.5	156	49	0	6.0	1.24	1.20
10/8	141	8.0	300	24	1.5	6.2	1.29	1.55
10/10	104.5	12.5	636	2	1.5	6.2	0.45	2.15
10/13	85	6.5	920	0	1.5	6.6	0.27	2.17
10/15	154	17.5	352	3	1.5	6.0	1.16	2.09
10/17	141.2	19.2	712	24	1.39	6.4	0.56	1.97
10/20	101	0	736	6	1.5	6.0	0.36	2.09
10/22	130	21	748	2	1.5	6.4	0.49	2.14
10/24	157	20.4	876	1	1.5	5.9	0.48	2.16
10/27	175	15	576	2	1.5	6.4	0.86	2.13
10/29	184	20	616	5	1.5	6.2	0.82	2.09
10/31	158	15	600	9	1.5	6.3	0.73	2.02
11/3	140	17.5	712	3	1.5	6.2	0.54	2.13
11/5	126	13	388	11	1.44	6.2	0.89	1.97
11/7	175	9.9	460	5	1.5	6.0	1.01	2.06
11/10	138	16	612	0	1.5	6.4	0.64	2.17
11/12	139	26	500	4	1.5	6.3	0.77	2.09
11/14	157	15	976	0	1.5	6.5	0.46	2.17
11/17	181	0	560	4	1.5	6.0	0.86	2.1
11/19	146	15	676	16	1.5	6.30	0.60	1.94
11/21	177	10	528	4	1.5	6.10	0.90	2.09
11/24	197.5	13	1384	2	1.5	6.4	0.40	2.15
11/26	163	4.1	616	34	1.1	6.25	0.73	2.12
11/28	139	9	736	216	0.0	6.3	0.53	1.22
N	26	26	26		26	26	26	26
$\bar{x}$	145.32	13.00	618.92	18.54	1.31	6.22	0.74	2.03
σ	29.36	6.13	246.1	41.51	0.43	0.18	0.29	0.28
C.V.%	20.21	47.18	39.76	223.87	32.85	2.88	39.45	13.83

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TABLE A-106. TOC DATA FOR 4 DAY ETHYL ACETATE UNIT

Chemical Compound: Ethyl Acetate θ_c = 4 days

Parameter: TOC Volume of Reactor = 3.065 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
10/8/80	141	32	588	8	0.75	6.25	0.70	3.55
10/17	141	14	432	48	0	6.3	0.97	3.04
10/22	130	10	384	3	0.7	6.6	1.05	3.99
10/27	175	9	820	1	0.75	6.3	0.63	4.03
10/29	184	20	892	26	0.51	6.3	0.61	4.04
11/10	138	13	808	4	0.74	6.4	0.51	3.92
11/12	139	13	778	16	0.5	6.25	0.52	4.54
11/14	157	17	992	28	0.5	6.4	0.48	4.11
11/17	181	3	1140	2	0.70	6.30	0.47	4.29
11/19	146	22	844	9	0.75	6.40	0.52	3.65
11/21	177	9	1060	5	0.75	6.10	0.48	3.89
11/24	197	5	1656	42	0.56	6.35	0.35	3.94
11/26	163	7	1392	7	0.75	6.25	0.34	3.87
11/28	139	11	1136	4	0.74	6.30	0.36	3.98
N	14	14	14	14	14	14	14	14
$\bar{x}$	157.76	13.25	923.0	14.5	0.62	6.32	0.57	3.92
σ	20.82	7.29	334.9	14.9	0.20	0.11	0.21	0.34
C.V.%	13.20	55.01	36.29	102.8	32.13	1.71	36.11	8.57

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TABLE A-107. TOC DATA FOR 6 DAY ETHYL ACETATE UNIT

Chemical Compound: Ethyl Acetate — θ_c = 6 days

Parameter: TOC — Volume of Reactor = 3.129 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
9/29/80	138	13	1164	40	0.25	6.35	0.35	5.63
10/1	149	54	848	38	0.25	6.25	0.50	4.83
10/6	73	3.45	736	15	0.35	6.0	0.27	5.96
10/8	141	2.9	752	3	0.55	6.0	0.52	5.37
10/10	104	1.44	740	4	0.55	6.4	0.42	5.26
10/15	154	13.0	880	64	0	5.4	0.43	5.53
10/17	141	9.2	652	38	0.04	6.6	0.66	5.29
10/20	101	14	960	1	0.55	6.0	0.29	5.6
10/22	130	16	1156	80	0.0	6.3	0.33	4.98
10/24	157	22.5	876	32	0.24	6.0	0.49	5.72
11/5	126	15	728	10	0.42	6.8	0.54	5.70
11/7	175	9.4	564	6	0.365	6.3	0.90	6.84
11/10	138	20	936	0	0.5	6.5	0.44	6.26
11/12	139	23	1268	3	0.5	6.3	0.32	6.01
11/14	157	18	2064	0	0.05	6.4	0.22	6.25
11/19	146	15	980	7	.5	6.30	0.43	5.58
11/21	177	4	1144	12	.45	6.00	0.43	5.84
11/24	197	6	1052	2	0.5	6.25	0.54	6.06
11/26	163	8.9	972	42	0.05	6.25	0.48	7.16
N	19	19	19	19	19	19	19	19
$\bar{x}$	142.51	14.15	972.2	20.93	0.32	6.23	0.45	5.78
σ	27.88	11.33	316.76	23.04	0.20	0.29	0.15	0.56
C.V.%	19.56	80.05	32.58	110.07	62.6	4.63	33.31	9.76

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TABLE A-108. COD DATA FOR 2 DAY ETHYL ACETATE UNIT

Chemical Compound: Ethyl Acetate
θ_c = 2 days
Parameter: COD
Volume of Reactor = 3.255 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
10/3/80	482	51.8	292	20	0.7	6.1	4.45	2.50
10/10	338	0.0	636	2	1.5	6.2	1.46	2.15
10/20	374	32.9	736	6	1.5	6.0	1.35	2.09
10/24	425	20	876	1	1.5	5.9	1.27	2.16
10/31	414	4.0	600	9	1.5	6.3	1.93	2.02
11/7	534	19.8	460	5	1.5	6.0	3.08	2.06
11/14	517	54.4	976	0	1.5	6.5	1.52	2.17
11/21	497	13.7	528	4	1.5	6.0	2.50	2.09
11/28	462	34.4	736	216	0.0	6.3	1.75	1.22
N	9	9	9	9	9	9	9	9
$\bar{x}$	449.5	25.7	648.9	29.22	1.25	6.14	2.15	2.05
σ	62.6	18.19	198.4	66.29	0.50	0.18	0.99	0.32
C.V.%	13.9	70.76	30.57	226.87	40.0	2.99	45.93	15.57

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TABLE A-109. COD DATA FOR 4 DAY ETHYL ACETATE UNIT

Chemical Compound: Ethyl Acetate
Parameter: COD

θ_c = 4 days
Volume of Reactor = 3.065 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
11/14/80	517.1	46.7	992	28	0.5	6.4	1.57	4.11
11/28	462	19.1	1136	4	0.74	6.3	1.20	3.98
11/21	497.8	29.3	1060	5	0.75	6.10	1.35	3.89
N	3	3	3	3	3	3	3	3
$\bar{x}$	492.3	31.7	1062.7	12.33	0.66	6.27	1.37	3.99
σ	22.93	11.44	59.1	11.13	0.12	0.13	0.15	0.09
C.V.%	4.66	36.1	5.56	90.3	17.59	2.0	11.14	2.27

TABLE A-110. COD DATA FOR 6 DAY ETHYL ACETATE UNIT

Chemical Compound: Ethyl Acetate				θ_c = 6 days				
Parameter: COD				Volume of Reactor = 3.129 liters				
Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
10/6/80	338	31	740	4	0.55	6.4	1.35	5.24
10/20	374	24.7	960	1	0.55	6.0	1.08	5.6
10/24	425	1.0	876	32	0.24	6.0	1.34	5.72
11/7	534	11.8	564	6	0.36	6.3	2.75	6.83
11/14	517	50.5	2064	0	0.5	6.4	0.74	6.26
11/21	497	29.3	1114	12	0.45	6.0	1.23	5.81
N	6	6	6	6	6	6	6	6
$\bar{X}$	447.8	24.73	1053.0	9.17	0.44	6.18	1.42	5.91
σ	73.98	15.56	483.62	10.93	0.11	0.19	0.63	0.51
C.V.%	16.52	62.93	45.93	119.21	25.16	3.02	44.5	8.63

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TABLE A-111. BOD_5 DATA FOR 2 DAY BENZENE, METHYLENE CHLORIDE AND ETHYL ACETATE COMBINED UNIT

Chemical Compound: Combined - Methylene Chloride
Ethyl Acetate
Benzene
Parameter: BOD_5

θ_c = 2 days
Volume of Reactor = 3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
9/29/80	195	1.5	941	7	1.5	6.2	0.60	1.96
10/1	183	0.6	998	5	1.5	6.2	0.53	1.98
10/3	267	2.5	990	8	1.5	6.2	0.79	1.96
10/6	260	1.5	1421	4	1.5	6.2	0.54	2.01
10/8	235	4	1449	6	1.5	6.2	0.47	1.99
10/10	200	3.8	1442	12	1.5	6.2	0.41	1.95
10/13	195	4.3	850	7	1.37	6.2	0.67	2.13
10/15	220	2.4	936	13	1.33	6.2	0.69	2.12
10/17	245	2.8	831	18	1.18	6.2	0.86	2.26
10/20	250	2.5	450	28	0.82	6.2	1.63	2.30
10/22	243	4.5	860	24	1.17	6.2	0.82	2.20
10/24	245	2.8	930	28	1.11	6.2	0.77	2.28
10/27	300	2.2	583	30	1.12	6.0	1.46	2.02
10/29	320	2.6	604	10	1.28	6.2	1.55	2.17
10/31	325	3.0	584	5	1.43	6.2	1.63	2.04
11/3	210	4	652	28	1.16	6.2	0.94	2.04
11/5	220	2	655	21	1.26	6.2	0.98	2.03
11/7	260	3.4	580	24	1.18	6.2	1.31	2.03
11/10	239	5.0	691	7	1.43	6.2	1.01	2.03
11/12	248	2.3	642	22	1.24	6.2	1.13	2.03
11/14	260	3.2	620	48	0.86	6.2	1.23	2.05
11/17	268	3.8	598	38	1.0	6.2	1.31	2.03
11/19	280	3.8	628	36	1.04	6.2	1.31	2.04
11/21	380	4.0	640	28	1.13	6.2	1.74	2.07
11/24	245	3.5	664	24	1.22	6.2	1.08	2.04
11/26	215	3.0	692	24	1.23	6.2	0.91	2.04
11/28	260	3.5	612	20	1.25	6.2	1.24	2.03
N	27	27	27	27	27	27	27	27
$\bar{x}$	250.67	3.06	797.89	19.44	1.25	6.19	1.02	2.07
σ	43.00	0.999	267.5	11.46	0.19	0.04	0.38	0.09
C.V.%	17.16	32.65	33.53	58.25	15.25	0.61	37.0	4.55

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TABLE A-112 BOD_5 DATA FOR 4 DAY BENZENE, METHYLENE CHLORIDE AND ETHYL ACETATE COMBINED UNIT

Chemical Compound: Combined - Methylene Chloride
Ethyl Acetate
Benzene

θ_c = 4 days

Parameter: BOD_5

Volume of Reactor = 3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
9/29/80	195	1.2	903	28	0.5	6.2	0.63	4.01
10/1	183	0.8	1041	29	0.5	6.2	0.52	4.15
10/3	267	3.6	1005	30	0.5	6.2	0.78	4.06
10/6	260	6.5	1200	42	0.32	6.2	0.63	4.87
10/8	235	5.5	983	20	0.60	6.2	0.70	3.96
10/10	200	8.0	1160	6	0.60	6.2	0.50	4.74
10/13	195	2.5	1102	20	0.54	6.2	0.52	4.40
10/15	220	1.7	1208	22	0.52	6.2	0.53	4.53
10/17	245	2.0	940	29	0.37	6.2	0.76	4.81
10/22	243	2.0	910	32	0.28	6.2	0.78	5.18
10/27	300	2.1	694	55	0.04	6.2	1.27	4.10
10/29	320	1.6	840	44	0.20	6.2	1.12	4.64
10/31	325	4.0	864	21	0.55	6.2	1.10	4.05
11/3	210	2.6	805	26	0.47	6.2	0.76	4.10
11/5	220	1.8	948	27	0.50	6.2	0.68	4.12
11/7	260	2.8	908	17	0.59	6.2	0.84	4.09
11/10	239	3.0	921	9	0.67	6.2	0.76	4.06
11/12	248	2.0	824	29	0.45	6.2	0.88	4.08
11/14	260	3.0	756	26	0.44	6.2	1.01	4.17
11/17	268	3.2	682	18	0.52	6.2	1.15	4.11
11/19	280	2.9	812	28	0.45	6.2	1.01	4.11
11/21	305	4.5	758	22	0.50	6.2	1.18	4.10
11/24	245	3.0	806	18	0.56	6.2	0.89	4.08
11/26	215	2.8	800	20	0.54	6.2	0.79	4.07
11/28	260	3.2	826	22	0.53	6.2	0.92	4.05
N	25	25	25	25	25	25	25	25
$\bar{x}$	247.92	3.05	907.84	25.60	0.47	6.2	0.83	4.27
σ	37.94	1.61	143.79	10.17	0.13	0	0.22	0.32
C.V.%	15.30	52.72	15.84	39.72	28.56	0	26.25	7.55

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TABLE A-113. BOD$_5$ DATA FOR 6 DAY BENZENE, METHYLENE CHLORIDE AND ETHYL ACETATE COMBINED UNIT

Chemical Compound: Combined - Methylene Chloride
Ethyl Acetate
Benzene

θ_c = 6 days

Parameter: BOD$_5$

Volume of Reactor = 2.97 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
9/29/80	195	2.4	1400	8	0.5	6.2	0.42	5.42
10/1	183	2.2	1391	6	0.5	6.2	0.39	5.54
10/3	267	1.0	1527	4	0.5	6.2	0.53	5.69
10/6	260	1.4	1398	0	0.5	6.2	0.56	5.94
10/8	235	2.0	1241	0	0.5	6.2	0.57	5.94
10/10	200	1.3	1400	0	0.5	6.2	0.43	5.94
10/13	195	2.7	1521	11	0.4	6.2	0.39	6.43
11/15	220	2.7	1694	12	0.41	6.2	0.39	6.31
11/17	245	2.7	1390	9	0.38	6.2	0.52	6.82
10/24	245	2.4	1260	24	0.25	6.2	0.58	7.15
10/27	300	4.5	942	68	0	6.0	0.93	4.76
11/3	210	3.0	1020	48	0.08	6.2	0.62	5.98
11/5	220	2.2	1051	41	0.16	6.2	0.63	5.92
11/7	260	1.6	1108	14	0.38	6.2	0.71	6.09
11/10	239	2.7	1154	12	0.41	6.2	0.62	5.96
11/12	248	2.2	1002	13	0.45	6.2	0.74	5.30
11/14	260	2.6	928	18	0.33	6.2	0.84	5.98
11/17	268	2.0	822	25	0.23	6.2	0.98	6.01
11/19	280	2.5	948	18	0.34	6.2	0.89	5.90
11/21	305	3.0	902	18	0.32	6.2	1.02	6.04
11/24	245	2.1	998	10	0.42	6.2	0.74	5.88
11/26	215	2.1	900	12	0.385	6.2	0.72	5.95
11/28	260	2.5	998	12	0.400	6.2	0.78	5.90
N	23	23	23	23	23	23	23	23
$\bar{x}$	241.5	2.34	1173.7	16.65	0.36	6.19	0.65	5.95
σ	32.28	0.69	242.48	15.86	0.14	0.04	0.19	0.47
C.V.%	13.37	29.47	20.66	95.26	37.55	0.66	29.03	7.82

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TABLE A-114. TOC DATA FOR 2 DAY BENZENE, METHYLENE CHLORIDE AND ETHYL ACETATE COMBINED UNIT

Chemical Compound: Combined - Methylene Chloride
Ethyl Acetate
Benzene

θ_c = 2 days

Parameter: TOC

Volume of Reactor = 3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
9/29/80	104	12	941	7	1.5	6.2	0.32	1.96
10/1	141	--	998	5	1.5	6.2	0.41	1.98
10/3	120	43	990	8	1.5	6.2	0.36	1.96
10/6	85	14	1421	4	1.5	6.2	0.18	2.01
10/8	137	11	1449	6	1.5	6.2	0.28	1.99
10/10	110	18	1442	12	1.5	6.2	0.22	1.95
10/13	47	0	850	7	1.37	6.2	0.16	2.13
10/15	144	13	936	13	1.33	6.2	0.45	2.12
10/17	58	19	831	18	1.18	6.2	0.20	2.26
10/22	132	19	860	24	1.17	6.2	0.45	2.20
10/24	136	37	930	28	1.11	6.2	0.43	2.27
10/27	188	21	583	30	1.12	6.0	0.91	2.02
10/29	200	16	604	10	1.28	6.2	0.97	2.17
10/31	158	18	584	5	1.43	6.2	0.79	2.04
11/3	141	8	652	28	1.16	6.2	0.63	2.04
11/5	125	8	655	21	1.26	6.2	0.56	2.03
11/7	131	18	580	24	1.18	6.2	0.66	2.03
11/10	156	16	691	7	1.43	6.2	0.66	2.03
11/12	137	16	642	22	1.24	6.2	0.62	2.03
11/14	143	13	620	48	0.86	6.2	0.68	2.05
11/17	146	10	598	38	1.0	6.2	0.71	2.03
11/19	133	15	628	36	1.04	6.2	0.62	2.04
11/21	176	5	640	28	1.13	6.2	0.82	2.07
11/24	155	9	664	24	1.22	6.2	0.68	2.04
11/26	129	6	692	24	1.23	6.2	0.54	2.04
11/28	119	16	612	20	1.25	6.2	0.57	2.03
N	26	25	27	27	27	27	27	27
$\bar{x}$	132.75	14.55	797.89	19.44	1.25	6.19	0.53	2.07
σ	33.17	9.32	267.23	11.45	0.19	0.04	0.22	0.09
C.V.%	24.99	64.06	33.49	58.91	15.23	0.61	41.61	4.51

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TABLE A-115. TOC DATA FOR 4 DAY BENZENE, METHYLENE CHLORIDE AND ETHYL ACETATE COMBINED UNIT

Chemical Compound: Combined - Methylene Chloride Ethyl Acetate Benzene

θ_c = 4 days

Parameter: TOC

Volume of Reactor = 3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
9/29/80	104	10.7	903	28	0.5	6.2	0.33	4.01
10/1	141	45	1041	29	0.5	6.2	0.40	4.15
10/3	120	13	1005	30	0.5	6.2	0.35	4.06
10/6	85	10	1200	42	0.325	6.2	0.21	4.87
10/8	137	20	983	20	0.60	6.2	0.41	3.96
10/10	110	21.5	1160	6	0.60	6.2	0.28	4.74
10/13	47	5	1102	20	0.54	6.2	0.13	4.40
10/15	144	7.5	1208	22	0.52	6.2	0.35	4.53
10/17	58	32.6	940	29	0.37	6.2	0.18	4.81
10/22	132	17	910	32	0.285	6.2	0.425	5.18
10/27	188	21	694	55	0.04	6.2	0.79	4.1
10/29	200	11	840	44	0.20	6.2	0.70	4.64
10/31	158	18.5	864	21	0.55	6.2	0.54	4.05
11/3	141	11	805	26	0.47	6.2	0.51	4.10
11/5	125	12	948	27	0.5	6.2	0.39	4.12
11/7	131	14	908	17	0.59	6.2	0.42	4.09
11/10	156	19	921	9	0.67	6.2	0.50	4.06
11/12	137	17	824	29	0.45	6.2	0.49	4.08
11/14	143	17	756	26	0.44	6.2	0.55	4.17
11/17	146	0	682	18	0.52	6.2	0.63	4.11
11/19	133	15	812	28	0.45	6.2	0.48	4.11
11/21	176	10	758	22	0.50	6.2	0.68	4.10
11/24	155	10	806	18	0.56	6.2	0.56	4.08
11/26	129	5	800	20	0.54	6.2	0.47	4.07
11/28	119	13	826	22	0.53	6.2	0.42	4.05
N	25	25	25	25	25	25	25	25
$\bar{x}$	132.62	15.03	907.84	25.6	0.47	6.2	0.45	4.27
σ	33.85	8.90	143.79	10.17	0.13	0	0.16	0.32
C.V.%	25.52	59.19	15.84	39.72	28.56	0	34.69	7.55

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TABLE A-116. TOC DATA FOR 6 DAY BENZENE, METHYLENE CHLORIDE AND ETHYL ACETATE COMBINED UNIT

Chemical Compound: Combined - Methylene Cloride, Ethyl Acetate, Benzene θ$_c$ = 6 days

Parameter: TOC Volume of Reactor = 2.97 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
9/29/80	104	21	1400	8	0.5	6.2	0.23	5.42
10/1	141	68	1391	6	0.5	6.2	0.30	5.54
10/3	120	50	1527	4	0.5	6.2	0.23	5.69
10/6	85	14	1398	0	0.5	6.2	0.18	5.94
10/8	137	19	1241	0	0.5	6.2	0.33	5.94
10/10	110	52	1400	0	0.5	6.2	0.24	5.94
10/13	47	7.0	1521	11	0.4	6.2	0.09	6.43
10/15	144	20	1694	12	0.41	6.2	0.26	6.31
10/17	58.4	7.8	1390	9	0.38	6.2	0.13	6.82
10/24	136	22	1260	24	0.25	6.2	0.32	7.15
10/27	188	15	942	68	0	6.0	0.58	4.76
11/3	141	1.1	1020	48	0.08	6.2	0.42	5.98
11/5	125	9	1051	41	0.16	6.2	0.36	5.92
11/7	131	26	1108	14	0.38	6.2	0.36	6.09
10/10	156	29	1154	12	0.41	6.2	0.41	5.91
11/12	137	23	1002	13	0.45	6.2	0.41	5.30
11/14	143	18	928	18	0.33	6.2	0.46	5.98
11/17	146	0.8	822	25	0.23	6.2	0.53	6.01
11/19	133	22	948	18	0.34	6.2	0.42	5.9
11/21	176	8	902	18	0.32	6.2	0.59	6.04
11/24	155	12.0	998	10	0.42	6.2	0.466	5.88
11/26	129	9	900	12	0.385	6.2	0.43	5.95
11/28	119	11	998	12	0.40	6.2	0.36	5.90
N	23	23	23	23	23	23	23	23
$\bar{x}$	128.76	20.63	1173.7	16.65	0.36	6.19	0.35	5.95
	31.70	15.77	241.99	15.83	0.13	0.04	0.13	0.46
C.V%	24.62	76.43	20.62	95.07	37.48	0.66	37.19	7.8

TABLE A-117. COD DATA FOR 2 DAY BENZENE, METHYLENE CHLORIDE AND ETHYL ACETATE COMBINED UNIT

Chemical Compound: Combined - Methylene Chloride, Ethyl Acetate, Benzene θ_c = 2 days

Parameter: COD   Volume of Reactor = 3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
10/3/80	319	4	990	8	1.5	6.2	0.95	1.96
10/10	261	38	1442	12	1.5	6.2	0.53	1.95
10/17	329	12.3	831	18	1.18	6.2	1.16	2.26
10/24	390	32	930	28	1.11	6.2	1.23	2.27
10/31	384	36	584	5	1.43	6.2	1.92	2.04
11/7	400	170	580	24	1.18	6.2	2.02	2.03
11/14	770	54.4	620	48	0.86	6.2	3.64	2.05
11/21	377	14	640	28	1.13	6.2	1.72	2.07
11/28	382	42	612	20	1.25	6.2	1.83	2.03
N	9	9	9	9	9	9	9	9
$\bar{X}$	401.33	44.74	803.2	21.22	1.24	6.2	1.67	2.07
σ	137.07	46.83	269.7	12.26	0.20	0	0.84	0.11
C.V.%	34.15	104.68	33.58	57.76	15.95	0	50.4	5.25

TABLE A-118. COD DATA FOR 4 DAY BENZENE, METHYLENE CHLORIDE AND ETHYL ACETATE COMBINED UNIT

Chemical Compound: Combined - Methylene Chloride, Ethyl Acetate, Benzene θ_c = 4 days

Parameter: COD Volume of Reactor = 3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F mg/l	F/M	θ_c days
10/3/80	319	16.0	1005	30	0.5	6.2	0.94	4.06
10/10	261	15.0	1160	6	0.6	6.2	0.66	4.74
10/17	329	32.9	940	29	0.37	6.2	1.02	4.81
10/31	384	36	864	21	0.55	6.2	1.30	4.05
11/7	400	12	908	17	0.59	6.2	1.30	4.09
11/14	770	27.2	756	26	0.44	6.2	2.98	4.17
11/21	377	22	758	22	0.50	6.2	1.46	4.1
11/28	382	23	826	22	0.53	6.2	1.35	4.05
N	8	8	8	8	8	8	8	8
$\bar{X}$	394	23.01	902.13	21.63	0.51	6.2	1.38	4.26
σ	123.97	8.01	127.1	7.19	0.07	0	0.66	0.30
C.V.%	31.46	35.2	14.1	33.25	14.14	0	47.62	7.1

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TABLE A-119. COD DATA FOR 6 DAY BENZENE, METHYLENE CHLORIDE AND ETHYL ACETATE COMBINED UNIT

Chemical Compound: Combined - Methylene Chloride, Ethyl Acetate, Benzene θ_c = 6 days

Parameter: COD Volume of Reactor = 2.97 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F mg/l	F/M mg/l	θ_c days
10/3/80	319	16.0	1527	4	0.5	6.2	0.63	5.69
10/6	261	15	1400	0	0.5	6.2	0.56	5.94
10/17	329	16.5	1390	9	0.38	6.2	0.71	6.82
10/24	390	32	1260	24	0.25	6.2	0.93	7.15
11/7	400	12	1108	14	0.38	6.2	1.09	6.09
11/14	770	62.2	928	18	0.33	6.2	2.49	5.98
11/21	377	33	902	18	0.32	6.2	1.26	6.04
11/28	382	15	998	12	0.400	6.2	1.15	5.91
N	8	8	8	8	8	8	8	8
x̄	403.5	25.21	1189.1	12.38	0.38	6.2	1.1	6.2
σ	145.9	15.96	224.1	7.42	0.08	0	0.58	0.47
C.V.%	36.16	63.3	18.84	59.92	21.35	0	52.6	7.66

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TABLE A-120. BOD_5 DATA FOR 2 DAY 1,2-DICHLOROBENZENE UNIT

Chemical Compound: 1,2-Dichlorobenzene θ_c = 2 days

Parameter: BOD_5 Volume of Reactor = 3.255 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
1/2/80	128	2.7	542	27	1.25	6.0	0.63	2.01
1/5	67.5	6.62	180	0	1.5	6.5	1.07	2.17
1/7	146.1	1.31	260	9	1.35	6.2	1.54	2.02
1/9	218.9	7.77	288	0	1.5	6.4	2.15	2.17
1/12	161	2.48	330	2	1.5	6.0	1.30	2.11
1/14	182	2.28	461	6	1.5	6.25	1.09	2.04
1/16	130	1.25	370	7	1.5	6.10	0.95	1.99
1/9	159.7	4.8	239	0	1.5	6.4	1.89	2.17
1/21	132.3	2.1	384	8	1.5	6.2	0.95	1.97
1/23	204.6	6.5	869	2	1.5	6.4	0.67	2.14
1/26	144	3.12	317	11	1.38	6.0	1.21	1.99
1/28	187.4	2.82	391	6	1.5	6.3	1.34	2.01
1/30	148.5	1.54	405	21	1.24	6.0	0.97	2.00
2/2	150.5	2.21	440	25	1.19	6.25	0.95	1.99
2/4	130	2.35	429	18	1.3	6.25	0.84	2.01
2/6	134.3	2.48	433	0	1.5	6.4	0.88	2.17
2/9	131	2.35	356	25	1.25	5.8	0.94	1.86
2/11	192	3.91	398	10	1.44	.62	1.32	2.00
2/13	158.5	2.5	356	5	1.5	6.4	1.26	2.02
2/16	193.6	6.42	366	114	0	6.45	1.51	1.13
2/18	145.5	1.8	313	39	0.58	6.3	1.30	1.99
2/20	194	4.65	348	39	0.71	6.25	1.54	1.99
2/23	172.5	2.15	275	39	0.5	5.8	1.61	2.02
2/25	264.5	4.22	296	62	0	6.4	2.53	1.69
2/27	170	1.35	377	5	1.5	6.0	1.20	2.04
N	25	25	25	25	25	25	25	25
$\bar{x}$	161.9	3.27	376.9	19.2	1.21	6.21	1.27	1.99
σ	37.8	1.82	125.9	24.9	0.46	0.19	0.44	0.20
C.V.%	23.3	55.7	33.4	129.6	37.7	3.14	34.4	10.2

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TABLE A-121. BOD_5 DATA FOR 4 DAY 1,2-DICHLOROBENZENE UNIT

Chemical Compound: 1,2-Dichlorobenzene θ_c = 4 days

Parameter: BOD_5 Volume of Reactor = 3.065 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/2/80	128	2.17	1070	23	0.59	6.1	0.34	4.00
1/5	67.5	7.84	700	0	0.75	6.5	0.29	4.09
1/7	146.1	1.21	802	9	0.675	6.3	0.54	3.98
1/9	218.9	4.28	556	0	0.75	6.4	1.84	4.09
1/12	161	1.73	1352	2	0.75	6.1	0.34	4.02
1/14	182	2.60	908	7	0.75	6.25	0.59	3.77
1/16	130	3.13	929	1	0.75	6.2	0.41	4.04
1/19	159.7	8.0	859	0	0.75	6.4	0.56	4.09
1/21	132.3	1.3	648	5	0.75	6.25	0.60	3.77
1/23	204.6	3.3	1197	0	0.75	6.4	0.51	4.09
1/26	144	1.0	831	12	0.64	6.2	0.50	4.03
1/28	187.4	10.4	651	14	0.58	6.3	0.85	4.02
1/30	148.5	1.62	693	16	0.59	5.8	0.58	3,98
2/2	150.5	1.71	778	2	0.74	6.4	0.58	4.02
2/4	130	1.3	840	5	0.7	6.25	0.45	4.09
2/6	134.3	2.51	221	0	0.75	6.25	1.78	4.09
2/9	131	1.3	588	5	0.75	5.8	0.61	3.76
2/11	192	4.56	866	6	0.71	6.3	0.66	3.99
2/13	158.5	1.70	517	23	0.40	6.0	0.86	4.00
2/18	145.5	0.8	542	30	0.3	6.0	0.76	4.02
2/23	172.5	2.0	767	4	0.75	6.2	0.66	3.87
2/25	264.5	6.24	1017	0	0.75	6.4	0.78	4.09
2/27	170	1.71	774	0	0.75	6.2	0.64	4.09
N	23	23	23	23	23	23	23	23
$\bar{x}$	159.1	3.15	787.2	7.13	0.68	6.22	0.68	4.04
σ	38.2	2.55	235.78	8.49	0.12	0.18	0.38	0.21
C.V.%	24.0	80.9	29.9	119.1	17.4	2.9	55.6	5.2

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TABLE A-122. BOD$_5$ DATA FOR 6 DAY 1,2-DICHLOROBENZENE UNIT

Chemical Compound: 1,2 Dichlorobenzene θ_c = 6 days

Parameter: BOD$_5$ Volume of Reactor = 3.129 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
1/2/80	128	1.68	963	41	0.16	6.0	0.37	6.01
1/5	67.5	3.09	566	9	0.39	6.6	0.36	5.85
1/7	146.1	8.6	532	32	0	6.6	0.83	5.47
1/9	218.9	6.79	556	26	0	6.8	1.23	6.83
1/12	161	2.88	521	4	0.5	6.2	0.88	5.54
1/19	159.7	5.7	549	0	0.5	6.3	0.84	6.26
1/21	132.3	1.41	598	5	0.5	6.4	0.65	5.46
1/23	204.6	5.2	824	4	0.5	6.4	0.73	5.77
1/26	144	1.7	781	7	0.45	6.0	0.51	5.98
1/28	187.4	1.61	1010	36	0.20	6.25	0.53	6.09
1/30	148.5	1.1	876	46	0.075	6.0	0.47	5.96
2/2	150.5	0.78	1133	16	0.4	6.4	0.39	5.97
2/4	130	1.1	1037	35	0.22	6.3	0.36	6.03
2/6	134.3	1.34	458	9	0.35	6.25	0.84	6.02
2/9	131	0.5	693	39	0.06	5.8	0.50	5.94
2/11	192	3.71	880	24	0.29	6.4	0.64	5.87
2/13	158.5	2.04	665	2	0.50	6.0	0.66	5.97
2/16	193.6	1.72	655	39	0	6.45	0.88	5.66
2/18	1455	1.3	602	25	0.16	6.3	0.70	5.90
2/20	194	1.4	803	10	0.42	6.25	0.69	5.94
2/23	172.5	1.5	528	4	0.55	6.2	0.93	5.10
2/25	264.5	3.69	500	1	0.5	6.5	1.58	6.04
2/27	170	0.84	662	4	0.55	6.2	0.73	5.21
N	23	23	23	23	23	23	23	23
$\bar{x}$	162.4	2.59	712.7	18.2	0.32	6.29	0.71	5.86
σ	38.6	2.08	190.7	15.3	0.19	0.23	0.28	0.35
C.V.%	23.8	80.3	26.8	83.8	60.2	3.6	39.8	5.95

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TABLE A-123. TOC DATA FOR 2 DAY 1,2-DICHLOROBENZENE UNIT

Chemical Compound: 1,2 Dichlorobenzene θ_c = 2 days

Parameter: TOC Volume of Reactor = 3.255 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/2 /80	158	16	542	27	1.25	6.0	0.74	2.01
1/5	116	14	180	0	1.5	6.5	1.85	2.17
1/7	137	17	260	9	1.35	6.2	1.45	2.02
1/9	154	17	288	0	1.5	6.4	1.51	2.17
1/12	218	17	330	2	1.5	6.0	1.75	2.11
1/14	164	19	461	6	1.5	6.25	0.98	2.04
1/16	172	25	370	7	1.5	6.10	1.25	1.99
1/19	171	19	239	0	1.5	6.4	2.06	2.17
1/21	157	22	384	8	1.5	6.2	1.12	1.97
1/23	172	11	869	2	1.5	6.4	0.56	2.14
1/26	172	20	317	11	1.38	6.0	1.44	1.99
1/28	160	29	391	6	1.5	6.3	1.14	2.01
2/2	136	13	440	25	1.19	6.25	0.85	1.99
2/4	139	12	429	18	1.3	6.25	0.90	2.01
2/6	155	26	433	0	1.5	6.4	1.01	2.17
2/9	148	28	356	25	1.25	5.8	1.07	1.86
2/11	118.5	26	398	10	1.44	6.2	0.82	2.00
2/13	141	24	356	5	1.5	6.4	1.12	2.02
2/16	144	4	366	114	0	6.45	1.12	0.56
2/18	142	10	313	39	0.58	6.3	1.26	1.99
2/20	121	38	348	39	0.71	6.25	0.96	1.99
2/25	133	23	296	62	0	6.4	1.27	1.69
2/27	168	20	377	5	1.5	6.0	1.18	2.04
N	23	23	23	23	23	23	23	23
$\bar{x}$	152.0	19.6	380.13	18.26	1.26	6.24	1.19	1.99
σ	22.06	7.29	129.6	25.6	0.45	0.18	0.35	0.21
C.V.%	14.5	37.2	34.1	140.4	36.5	2.84	29.6	10.6

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TABLE A-124. TOC DATA FOR 4 DAY 1,2-DICHLOROBENZENE UNIT

Chemical Compound: 1,2-Dichlorobenzene — θ_c = 4 days

Parameter: TOC — Volume of Reactor=3.065 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
1/2/80	158	16	1070	23	0.59	6.1	0.42	4.00
1/5	116	12	700	0	0.75	6.5	0.51	4.09
1/7	137	12	802	9	0.675	6.3	0.51	3.98
1/9	154	15	556	0	0.75	6.4	0.83	4.09
1/12	218	36	1352	2	0.75	6.1	0.46	4.02
1/14	164	43	908	7	0.75	6.4	0.53	3.77
1/16	172	17	929	1	0.75	6.2	0.54	4.04
1/19	171	18	859	0	0.75	6.4	0.60	4.09
1/21	157	17	648	5	0.75	6.25	0.71	3.77
1/23	172	13	1197	0	0.75	6.4	0.43	4.09
1/26	172	21	831	12	0.64	6.2	0.60	4.03
1/28	160	21	651	14	0.58	6.3	0.73	4.02
2/2	136	14	778	2	0.74	6.4	0.53	4.02
2/4	139	12	840	5	0.7	6.25	0.49	4.09
2/6	155	17	221	0	0.75	6.25	2.06	4.09
2/9	148	20	588	5	0.75	5.8	0.69	3.76
2/11	118.5	20	866	6	0.71	6.3	0.41	3.99
2/13	141	22	517	23	0.40	6.0	0.77	4.00
2/18	142	11	542	30	0.3	6.0	0.74	4.02
2/25	133	49	1017	0	0.75	6.4	0.39	4.09
2/27	168	17	774	0	0.75	6.2	0.63	4.09
N	21	21	21	21	21	21	21	21
$\bar{x}$	153.9	20.2	792.7	6.86	0.68	6.24	0.65	4.05
σ	21.96	9.97	246.2	8.66	0.12	0.16	0.34	0.22
C.V.%	14.3	49.4	31.1	126.2	17.8	2.6	52.5	5.4

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TABLE A-125. TOC DATA FOR 6 DAY 1,2-DICHLOROBENZENE UNIT

Chemical Compound: 1,2-Dichlorobenzene θ_c = 6 days

Parameter: TOC Volume of Reactor = 3.129 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/2/80	158	19	963	41	0.16	6.0	0.45	6.00
1/5	116	18	566	9	0.39	6.6	0.623	5.85
1/7	137	25	532	32	0	6.6	0.782	5.47
1/9	154	25	556	26	0	6.8	0.867	6.83
1/12	218	29	521	4	0.5	6.2	1.19	5.54
1/19	171	25	549	0	0.5	6.3	0.90	6.26
1/21	157	15	598	5	0.5	6.4	0.77	5.46
1/23	172	12	824	4	0.5	6.4	0.61	5.77
1/26	172	12	781	7	0.45	6.0	0.61	5.98
1/28	160	9	1010	36	0.20	6.25	0.46	6.09
2/2	136	6.4	1133	16	0.4	6.4	0.35	5.97
2/4	139	18	1037	35	0.22	6.3	0.39	6.03
2/6	155	2	458	9	0.35	6.25	0.97	6.02
2/9	148	10	693	39	0.06	5.8	0.57	5.94
2/11	119	45	880	24	0.29	6.4	0.40	5.87
2/13	141	9.5	665	2	0.50	6.0	0.59	5.97
2/16	144	13	655	39	0	6.45	0.65	5.66
2/18	142	0	602	25	0.16	6.3	0.68	5.9
2/20	121	68	803	10	0.42	6.25	0.43	5.94
2/27	168	21	662	4	0.55	6.2	0.72	5.21
N	20	19	20	20	20	20	20	20
$\bar{x}$	151.4	16.5	724.4	18.4	0.31	6.3	0.67	5.89
σ	22.6	10.2	189.4	14.2	0.19	0.23	0.21	0.33
C.V.%	14.9	62.0	26.2	77.0	60.2	3.6	32.4	5.6

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TABLE A-126. COD DATA FOR 2 DAY 1,2-DICHLOROBENZENE UNIT

Chemical Compound: 1,2-Dichlorobenzene θ_c = 2 days

Parameter: COD Volume of Reactor = 3.255 liters

Date	Si mg/l	Se mg/l	X mg/l	X_e mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/16/80	412	23.8	370	7	1.5	6.1	3.01	1.99
1/23	402	33.2	869	2	1.5	6.4	1.31	2.14
1/9	421	47	288	0	1.5	6.4	4.14	2.17
1/30	427	70.6	405	21	1.24	6.0	2.8	2.0
2/6	415	35.6	433	0	1.5	6.4	2.71	2.17
2/13	440	16	356	5	1.5	6.4	3.50	2.02
2/20	325	15	348	39	0.71	6.25	2.58	1.99
2/27	480	42	377	5	1.5	6.0	3.38	2.04
N	8	8	8	8	8	8	8	8
$\bar{x}$	415.5	35.4	430.8	9.88	1.37	6.24	2.93	2.07
σ	40.96	17.95	176.5	12.74	0.26	0.17	0.81	0.08
C.V.%	9.9	50.7	41.4	128.9	19.3	2.8	27.7	3.83

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TABLE A- 127. COD DATA FOR 4 DAY 1,2-DICHLOROBENZENE UNIT

Chemical Compound: 1,2-Dichlorobenzene θ_c = 4 days

Parameter: COD Volume of Reactor = 3.255 liters

Date	Si mg/l	Se mg/l	X mg/l	X_e mg/l	F_w l/day	F ml/min	F/M	θ_c days
1/12/80	412	75.8	929	1	0.75	6.2	1.29	4.04
1/23	402	41.5	1197	0	0.75	6.4	1.01	4.09
1/9	421	51	556	0	0.75	6.4	2.28	4.09
1/30	427	35.3	693	16	0.59	5.8	1.68	3.98
2/6	415	--	221	0	0.75	6.25	5.51	4.09
2/13	440	16	517	23	0.4	6.0	2.40	4.00
2/27	480	21	774	0	0.75	6.2	1.81	4.09
N	7	6	7	7	7	7	7	7
$\bar{x}$	428.4	40.1	698.1	5.7	0.68	6.18	2.28	4.05
σ	23.7	19.8	291.3	8.96	0.13	0.20	1.48	0.04
C.V,%	5.5	49.3	41.7	157.3	18.6	3.3	64.8	1.1

TABLE A- 128. COD DATA FOR 6 DAY 1,2-DICHLOROBENZENE UNIT

Chemical Compound: 1,2-Dichlorobenzene θ_c = 6 days

Parameter: COD Volume of Reactor = 3.129 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/16/80	412	43.6	532	46	0	6.2	2.21	4.05
1/23	402	49.8	824	4	0.5	6.4	1.44	5.77
1/9	421	56	556	26	0	6.8	2.37	6.83
1/30	427	47	876	46	0.075	6.0	1.35	5.96
2/6	415	61.2	458	9	0.35	6.25	2.61	6.02
2/13	440	37	665	2	0.50	6.00	1.83	5.97
2/20	325	38	803	10	0.42	6.25	1.16	5.94
2/27	480	55	662	4	0.55	6.2	2.07	5.21
N	8	8	8	8	8	8	8	8
$\bar{x}$	415.5	48.5	672	18.4	0.30	6.26	1.88	5.72
σ	40.96	8.2	142.5	18.24	0.22	0.24	0.49	0.76
C.V.%	9.9	16.9	21.2	99.1	73.9	3.8	26.1	13.2

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TABLE A- 129. BOD$_5$ DATA FOR 2 DAY 1,2-DICHLOROETHANE UNIT

Chemical Compound: 1,2-Dichloroethane θ_c = 2 days

Parameter: BOD$_5$ Volume of Reactor = 3.13 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/2/80	184	3.1	475	0	1.5	6.5	1.16	2.09
1/12	234	1.8	616	53.0	1.05	6.2	1.08	1.81
1/14	222	1.0	690	2	1.5	6.2	0.92	2.06
1/16	226	0.6	606	0	1.5	6.0	1.03	2.09
	206	0.6	422	0	1.5	6.1	1.37	2.09
	211	1.0	546	4	1.5	6.0	1.07	2.02
	194	0.4	387	5	1.5	6.3	1.45	1.96
1/19	171	0.6	634	4	1.5	5.4	0.67	2.03
1/21	186	1.3	994	9	1.5	6.4	0.55	1.99
1/23	208	0.8	486	9	1.45	6.4	1.26	1.96
1/26	261	0.8	532	1	1.5	6.3	1.42	2.07
1/28	200	1.4	739	4	1.5	5.6	0.70	2.04
1/30	175	0.7	951	3	1.48	6.4	0.54	2.08
2/2	176	1.2	732	3	1.5	6.2	0.69	2.05
2/4	82	0.7	759	1	1.5	6.2	0.31	2.07
2/6	117	0.6	774	5	1.51	6.2	0.43	2.00
2/9	175	0.8	612	3	1.5	6.35	0.84	2.04
2/11	173	0.9	753	3	1.5	6.2	0.66	2.05
2/13	161	0.0	604	69	1.46	5.5	0.67	1.42
2/16	214	1.2	563	0	1.5	6.7	1.17	2.09
2/18	256	1.8	569	11	1.45	6.2	1.28	1.96
2/20	229	1.5	642	0	1.5	6.2	1.02	2.09
2/23	261	2.3	566	2	1.5	6.4	1.36	2.05
2/27	222	2.9	567	3	1.5	6.5	1.17	2.03
N	24	24	24	24	24	24	24	24
$\bar{x}$	197.67	1.17	634.13	8.08	1.48	6.19	0.95	2.01
σ	41.24	0.74	143.84	16.4	0.09	0.30	0.33	0.14
C.V.%	20.86	63.7	22.7	202.8	6.12	4.91	34.6	6.8

TABLE A-130. BOD_5 DATA FOR 4 DAY 1,2-DICHLOROETHANE UNIT

Chemical Compound: 1,2 Dichloroethane θ_c = 4 days

Parameter: BOD_5 Volume of Reactor = 3.14 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/2/80	184	2.3	563	26	0.375	6.1	0.91	4.11
1/16	226	1.8	490	4	0.75	6.4	1.35	3.83
	206	0.8	1170	0	0.75	6.8	0.55	4.19
	211	1.0	704	2	0.75	6.0	0.82	4.07
	194	0.8	836	25	0.55	6.4	0.68	3.88
1/19	171	1.5	2281	9	0.7	6.4	0.22	4.28
1/21	186	1.1	1352	4	0.7	6.4	0.40	4.33
1/23	208	1.4	866	21	0.75	6.3	0.69	3.30
1/26	261	0.8	824	0	0.75	6.65	0.97	4.19
1/28	200	1.4	1074	3	0.75	6.3	0.54	4.06
1/30	175	0.7	1253	4	0.70	6.4	0.41	4.32
2/2	176	0.5	1081	0	0.75	6.4	0.48	4.19
2/4	82	0.6	1156	26	0.45	6.2	0.20	4.90
2/13	161	0.8	1592	143	0	6.6	0.31	3.68
2/18	256	3.6	1434	15	0.72	6.4	0.52	3.88
2/20	229	1.4	730	9	0.70	6.5	0.94	3.89
2/23	261	4.7	915	6	0.75	6.6	0.86	3.89
2/27	222	2.6	1026	0	0.75	6.6	0.66	4.19
N	18	18	18	18	18	18	18	18
$\bar{x}$	200.5	1.53	1074.8	16.5	0.65	6.41	0.64	4.07
σ	41.27	1.08	409.34	31.96	0.19	0.19	0.29	0.32
C.V.%	20.6	70.3	38.1	193.7	29.6	2.98	45.2	7.9

TABLE A-131. BOD$_5$ DATA FOR 6 DAY 1,2-DICHLOROETHANE UNIT

Chemical Compound: 1,2-Dichloroethane — θ_c = 6 days

Parameter: BOD$_5$ — Volume of Reactor = 304 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/2/80	184	2.2	572	44	0.0	6.2	0.95	4.43
1/5	234	2.0	580	3	0.45	5.9	1.13	6.18
1/7	222	0.7	682	4	0.48	5.8	0.89	5.78
1/9	226	0.9	784	3	0.50	6.2	0.85	5.71
1/12	206	0.8	1179	0	0.5	6.6	0.55	6.08
1/14	211	1.3	1276	0	0.5	6.4	0.50	6.08
1/16	194	0.6	1056	11	0.45	6.4	0.56	5.62
1/19	171	1.9	1577	0	0.45	6.2	0.32	6.76
1/21	186	1.0	1288	8	0.4	6.2	0.42	6.71
1/23	208	2.9	1116	12	0.4	5.5	0.49	6.32
1/26	261	1.4	1299	1	0.5	6.4	0.61	6.00
1/28	200	2.2	1334	22	0.375	6.3	0.45	5.86
1/30	175	1.6	1895	59	0.14	6.0	0.26	7.51
2/2	176	1.1	1436	100	0	6.0	0.35	5.05
2/16	214	1.6	1628	4	0.5	6.2	0.39	5.84
2/18	256	3.4	1726	10	0.5	6.5	0.46	5.51
2/20	229	1.0	1470	2	0.5	6.4	0.47	5.94
2/25	261	3	1427	4	0.5	6.6	0.57	5.79
2/27	222	2.2	1463	1	0.5	6.3	0.45	6.01
N	19	19	19	19	19	19	19	19
$\bar{x}$	212.4	1.67	1252.0	15.16	0.40	6.22	0.56	5.96
σ	27.28	0.80	366.71	25.08	0.16	0.27	0.22	0.62
C.V.%	12.8	47.6	29.3	165.5	39.9	4.36	39.97	10.5

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TABLE A-132. TOC DATA FOR 2 DAY 1,2-DICHLOROETHANE UNIT

Chemical Compound: 1,2-Dichloroethane — θ_c = 2 days

Parameter: TOC — Volume of Reactor = 3.13 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c day
1/2/80	168	17	475	0	1.5	6.5	1.06	2.09
1/12	162	19	616	53	1.05	6.2	0.75	1.81
1/14	168	14	690	2	1.5	6.2	0.69	2.06
1/16	177	9	606	0	1.5	6.0	0.81	2.09
	225	17	422	0	1.5	6.1	1.50	2.09
	204	30	546	4	1.5	6.0	1.03	2.02
	195	17	387	5	1.5	6.3	1.46	1.96
1/19	177	13	634	4	1.5	5.4	0.69	2.03
1/21	205	25	994	9	1.5	6.4	0.61	1.99
1/23	193	16	486	9	1.45	6.4	1.17	1.96
1/26	194	22	532	1	1.5	6.3	1.06	2.07
1/28	194	17	739	4	1.5	5.6	0.68	2.04
1/30	192	9	951	3	1.48	6.4	0.59	2.08
2/2	209	14.6	732	3	1.5	6.2	0.81	2.05
2/4	203	13	759	1	1.5	6.2	0.76	2.07
2/6	179	21	774	5	1.514	6.2	0.66	2.0
2/9	173	19	612	3	1.5	6.35	0.83	2.04
2/11	208	27	753	3	1.5	6.2	0.79	2.05
2/13	180	17	604	69	1.46	5.5	0.75	1.42
2/16	183	9.7	563	0	1.5	6.7	0.77	2.09
2/18	147	20	569	11	1.45	6.2	0.30	1.96
2/20	178	17	642	0	1.5	6.2	0.73	2.09
2/23	195	30.3	566	2	1.5	6.4	1.01	2.05
2/25	181	27	682	0	1.5	6.3	0.77	2.09
2/27	145	23	567	3	1.5	6.5	0.76	2.03
N	25	25	25	25	25	25	25	25
$\bar{x}$	185.4	18.54	636.04	7.76	1.48	6.19	0.84	2.01
σ	18.78	5.91	141.12	16.3	0.09	0.30	0.26	0.14
C.V.%	10.13	31.9	22.2	207.8	5.99	4.82	3.06	6.7

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TABLE A- 133. TOC DATA FOR 4 DAY 1,2-DICHLOROETHANE UNIT

Chemical Compound: 1,2-Dichloroethane θ_c = 4 days

Parameter: TOC Volume of Reactor = 3/14 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
1/2/80	168	12	563	26	0.375	6.1	0.83	4.11
1/16	177	13	490	4	0.75	6.4	1.06	3.83
	225	33	1170	0	0.75	6.8	0.60	4.19
	204	13	704	2	0.75	6.0	0.80	4.07
	195	14	836	25	0.55	6.4	0.68	3.88
1/19	177	17	2281	9	0.7	6.4	0.23	4.28
1/21	205	28	1352	4	0.7	6.4	0.45	4.33
1/23	193	8	866	21	0.75	6.3	0.64	3.30
1/26	194	20	824	0	0.75	6.65	0.52	4.19
1/28	194	20	1074	3	0.75	6.3	0.52	4.06
1/30	192	11	1253	4	0.70	6.4	0.45	4.32
2/2	209	18.6	1081	0	0.75	6.4	0.57	4.19
2/4	203	18	1156	26	0.45	6.2	0.50	4.90
2/13	180	22	1592	143	0	6.6	0.34	3.68
2/18	147	22	1434	15	0.72	6.4	0.30	3.88
2/20	178	20	730	9	0.70	6.5	0.73	3.89
2/23	195	30	915	6	0.75	6.6	0.65	3.89
2/25	181	23	1030	0	0.75	6.1	0.49	4.19
2/27	145	21	1026	0	0.75	6.6	0.43	4.19
N	19	19	19	19	19	19	19	19
$\bar{x}$	187.47	19.14	1072.47	15.63	0.65	6.4	0.57	4.07
σ	19.36	6.36	397.94	31.27	0.19	0.20	0.19	0.31
C.V.%	10.33	33.3	37.02	200.06	28.5	3.1	34.1	7.7

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TABLE A-134. TOC DATA FOR 6 DAY 1,2-DICHLOROETHANE UNIT

Chemical Compound: 1,2-Dichloroethane θ_c = 6 days

Parameter: TOC Volume of Reactor = 3.04 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	F_w 1/day	F ml/min	F/M	θ_c days
1/2/80	168	13	572	4.4	0.0	6.2	0.86	4.43
1/12	162	12	580	3	0.45	5.9	0.78	6.18
1/14	168	14	682	4	0.48	5.8	0.68	5.78
1/16	177	10	784	3	0.50	6.2	0.66	5.71
	225	24	1179	0	0.5	6.6	0.60	6.08
	204	16	1276	0	0.5	6.4	0.48	6.08
	195	22	1056	11	0.45	6.4	0.56	5.62
1/19	177	15	1577	0	0.45	6.2	0.33	6.76
1/21	205	27	1288	8	0.4	6.2	0.47	6.71
1/23	193	8	1116	12	0.4	5.5	0.45	6.32
1/26	194	24	1299	1	0.5	6.4	0.45	6.0
1/28	194	17	1334	22	0.375	6.3	0.43	5.86
1/30	192	11	1895	59	0.14	6.0	0.29	7.51
2/2	209	18.9	1436	100	0	6.0	0.41	5.05
2/16	183	9.7	1628	4	0.5	6.2	0.33	5.84
2/18	147	21	1726	10	0.5	6.5	0.26	5.51
2/20	178	17	1470	2	0.5	6.4	0.37	5.94
2/23	195	25.5	1427	4	0.5	6.6	0.43	5.79
2/27	145	25	1463	1	0.5	6.3	0.30	6.01
N	20	20	20	20	20	20	20	20
$\bar{x}$	184.8	17.56	1268.15	14.4	0.41	6.24	0.48	5.96
σ	19.81	5.73	363.74	24.63	0.16	0.28	0.16	0.61
C.V.%	10.7	32.64	28.7	171.1	38.7	4.44	34.0	10.2

TABLE A-135. COD DATA FOR 2 DAY 1,2-DICHLOROETHANE UNIT

Chemical Compound: 1,2 Dichloroethane θ_c = 2 days

Parameter: COD Volume of Reactor = 3.13 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/16/80	432	28	387	5	1.5	6.3	3.24	1.96
1/23	465	29	486	9	1.45	6.4	2.82	1.96
1/28	451	43	739	4	1.5	5.6	1.57	2.08
1/30	435	27	951	3	1.48	6.4	1.35	2.08
2/6	454	32	774	5	1.51	6.2	1.67	2.0
2/11	550	39	753	3	1.5	6.2	2.08	2.05
2/13	620	18	604	69	1.46	5.5	2.60	1.42
2/20	750	50	642	0	1.5	6.2	3.33	2.09
2/27	480	59	567	3	1.5	6.5	2.53	2.03
N	9	8	9	9	9	9	9	9
$\bar{x}$	515.22	34.38	655.9	11.22	1.49	6.14	2.35	1.96
σ	100.97	11.78	159.15	20.49	0.02	0.33	0.68	0.20
C.V.%	19.6	34.3	24.3	182.6	1.35	5.41	28.97	10.0

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TABLE A-136. COD DATA FOR 4 DAY 1,2-DICHLOROETHANE UNIT

Chemical Compound: 1,2-Dichloroethane θ_c = 4 days

Parameter: COD Volume of Reactor = 3.14 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
1/16/80	432	32	836	25	0.55	6.4	1.52	3.88
1/23	465	33	866	21	0.75	6.3	1.55	3.30
1/28	451	35	1074	3	0.75	6.3	1.21	4.06
1/30	435	35	1253	4	0.70	6.4	1.02	4.32
2/13	620	38	1592	143	0	6.6	1.18	3.68
2/20	750	20	730	9	0.7	6.5	3.06	3.89
2/27	480	13	1026	0	0.75	6.6	1.42	4.19
N	7	6	7	7	7	7	7	7
$\bar{x}$	461.29	31.0	1053.86	29.29	0.60	6.44	1.57	3.9
σ	207.07	8.24	273.28	47.45	0.25	0.12	0.64	0.32
C.V.%	44.9	26.6	25.9	162.0	42.5	1.84	40.8	8.11

TABLE A-137. COD DATA FOR 6 DAY 1,2-DICHLOROETHANE UNIT

Chemical Compound: 1,2-Dichloroethane θ_c = 6 days

Parameter: COD Volume of Reactor = 3.04 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/16/80	432	32	1056	11	0.45	6.4	1.24	5.62
1/23	465	25	1116	12	0.4	5.5	1.09	6.32
1/28	451	43	1334	22	0.375	6.3	1.01	5.86
1/30	435	35	1895	59	0.14	6.0	0.65	7.51
2/20	750	8	1470	2	0.5	6.4	1.55	5.94
2/27	480	18	1463	1	0.5	6.3	0.98	6.01
N	6	6	6	6	6	6	6	6
$\bar{x}$	434.83	26.83	1389	17.83	0.39	6.15	1.09	6.21
σ	21.07	11.44	274.97	19.63	0.12	0.32	0.27	0.62
C.V.%	48.5	42.7	19.8	110.1	31.1	5.2	25.0	9.9

TABLE A-138. BOD_5 DATA FOR 2 DAY PHENOL UNIT

Chemical Compound: Phenol

Parameter: BOD_5

θ_c = 2 days,

Volume of Reactor = 3.06 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
1/2/80	265	2.75	475	12.0	1.31	6.0	1.58	2.05
1/5	295	3.3	500	14	1.29	6.0	1.67	2.05
1/7	280.5	3.65	518	0	1.5	6.2	1.58	2.04
1/9	258.7	0.6	658	2	1.45	6.1	1.13	2.08
1/12	273.5	0.73	796	10	1.5	6.0	0.97	1.92
1/16	269.5	0.44	598	0	1.5	6.2	1.31	--
1/19	268.5	0.86	620	5	1.475	6.0	1.22	1.99
1/21	271.5	1.29	653	0	1.5	5.9	1.15	2.04
1/23	256	0.62	736	9	1.375	6.1	1.00	2.09
1/26	296	1.32	690	9	1.475	6.1	1.23	1.94
1/28	282	0.87	535	0	1.5	6.3	1.56	2.04
1/30	260	0.66	746	9	1.41	6.3	1.03	2.04
2/2	274.5	0.7	873	26	1.3	6.2	0.92	2.00
2/4	257	0.54	595	7	1.43	5.1	1.04	2.04
2/6	285	0.55	693	0	1.5	6.5	1.26	2.04
2/9	234.6	1.1	715	5	1.4	5.8	0.90	2.11
2/11	253	0	639	0	1.5	6.4	1.19	2.04
2/13	285	0.8	708	5	1.4	6.3	1.19	2.10
2/16	260	0.09	753	2	1.475	6.3	1.02	2.05
2/18	304	1.08	652	0	1.5	5.8	1.27	2.04
2/20	279.2	0.54	663	0	1.5	6.3	1.25	2.04
2/23	300	0.43	676	9	1.4	6.0	1.25	2.04
2/25	308	1.71	694	0	1.5	6.0	1.25	2.04
2/27	322.5	1.28	685	0	1.5	6.1	1.35	2.04
N	24	24	24	24	24	24	24	23
$\bar{x}$	276.6	1.08	661.29	5.17	1.45	6.08	1.22	2.04
σ	20.01	0.91	91.58	6.24	0.07	0.28	0.21	0.04
C.V.%	7.23	84.14	13.9	120.7	4.72	4.54	17.0	2.1

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TABLE A- 139. BOD_5 DATA FOR 4 DAY PHENOL UNIT

Chemical Compound: Phenol — θ_c = 4 days

Parameter: BOD_5 — Volume of Reactor = 3.08 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/2/80	265	3.05	669	19.0	0.515	6.0	1.11	4.13
1/5	295	6.05	648	42	0.18	6.2	1.32	4.12
1/7	280.5	5.4	722	2	0.73	6.2	1.13	4.09
1/9	258.7	0.53	630	2	0.70	6.0	1.15	4.25
1/12	273.5	0.8	1080	4	0.75	6.2	0.73	3.95
1/16	269.5	1.12	1005	0	0.75	6.4	0.80	4.11
1/19	268.5	1.98	1148	7	0.725	6.0	0.66	3.98
1/21	271.5	1.33	1168	0	0.75	6.4	0.70	4.11
1/23	256	0.48	1024	4	0.675	6.0	0.70	4.36
1/26	296	0.92	1239	12	0.675	6.0	0.67	4.09
1/28	282	0.81	1113	0	0.75	6.2	0.73	4.11
1/30	260	0.3	1079	14	0.642	6.2	0.70	4.11
2/2	274.5	0.87	1176	5	0.725	6.0	0.65	4.06
2/4	257	0.24	1113	0	0.75	6.2	0.67	4.11
2/6	285	0.8	1112	0	0.75	6.0	0.72	4.11
2/9	234.6	1.07	1119	4	0.725	6.4	0.63	4.08
2/11	253	0	1048	4	0.72	6.3	0.71	4.10
2/13	285	0.31	1091	5	0.71	6.2	0.76	4.12
2/16	260	0.34	1126	4	0.725	6.4	0.69	4.08
2/18	304	1.35	1036	0	0.75	6.4	0.88	4.11
2/20	279.2	0.5	942	0	0.75	6.2	0.86	4.11
2/23	300	0.44	827	5	0.7	6.0	1.02	4.11
2/25	308	1.5	880	0	0.75	6.3	1.03	4.11
2/27	322.5	0.72	1147	0	0.75	6.3	0.83	4.12
N	24	24	24	24	24	24	24	24
$\bar{x}$	276.6	1.29	1005.9	5.54	0.69	6.19	0.83	4.11
σ	20.01	1.48	176.7	9.00	0.12	0.15	0.19	0.07
C.V.%	7.23	115.3	17.56	162.4	17.1	2.44	22.98	1.8

TABLE A-140. BOD_5 DATA FOR 6 DAY PHENOL UNIT

Chemical Compound: Phenol
Parameter: BOD_5

θ_c = 6 days
Volume of Reactor = 3.1 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/7/80	280.5	4.3	756	14	0.335	6.4	1.10	6.21
1/9	258.7	0.39	742	0	0.48	6.2	1.00	6.46
1/12	273.5	0.71	1031	5	0.5	6.1	0.75	5.74
1/16	269.5	0.69	913	0	0.5	6.6	0.90	6.20
1/19	268.5	3.7	947	10	0.45	6.0	0.79	5.78
1/21	271.5	2.64	1163	0	0.5	6.3	0.68	6.20
1/23	256	1.07	1088	5	0.45	6.2	0.68	6.34
1/26	296	1.51	1260	0	0.475	5.9	0.64	6.53
1/28	282	1.74	1192	0	0.5	6.2	0.68	6.20
1/30	260	0.96	1375	14	0.415	6.2	0.54	6.18
2/2	274.5	1.35	1320	12	0.475	6.2	0.60	5.62
2/4	257	0.24	1250	0	0.5	6.2	0.59	6.07
2/6	285	0.6	1313	12	0.41	6.4	0.65	6.32
2/9	234.6	1.23	1232	5	0.46	6.0	0.53	6.29
2/11	253	0.15	1313	48	0.18	6.2	0.56	6.17
2/13	285	3.12	1137	7	0.45	5.2	0.61	6.28
2/16	260	0.15	1169	7	0.45	6.2	0.64	6.19
2/18	304	1.27	994	0	0.5	6.2	0.88	6.20
2/20	279.2	0.73	978	0	0.5	6.2	0.82	6.20
2/23	300	0.43	1060	7	0.44	6.0	0.79	6.20
2/25	308	1.2	870	0	0.5	6.0	0.99	6.20
2/27	322.5	1.07	1265	0	0.5	6.0	0.71	6.27
N	22	22	22	22	22	22	22	22
$\bar{x}$	276.32	1.33	1107.18	6.64	0.45	6.13	0.73	6.18
σ	20.42	1.12	180.35	10.34	0.07	0.26	0.16	0.21
C.V.%	7.4	83.9	16.3	155.8	15.9	4.2	21.1	3.4

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TABLE A-141. TOC DATA FOR 2 DAY PHENOL UNIT

Chemical Compound: Phenol θ_c = 2 days

Parameter: TOC Volume of Reactor = 3.06 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
1/2/80	173	13	475	12	1.31	6.0	1.03	2.05
1/5	144	23	500	14	1.29	6.0	0.81	2.05
1/7	153	17	518	0	1.5	6.2	0.86	2.04
1/9	174	8	658	2	1.45	6.1	0.76	2.08
1/12	192	19	796	10	1.5	6.0	0.68	1.92
1/14	176	22	743	0	1.5	6.0	0.67	2.04
1/16	177	11	598	0	1.5	6.2	0.86	2.04
1/19	173	13	620	5	1.475	6.0	0.79	1.99
1/21	176	10	653	0	1.5	5.9	0.75	2.04
1/23	182	13	736	9	1.375	6.1	0.71	2.09
1/26	152	11	690	9	1.475	6.1	0.63	1.94
1/28	156.5	21	535	0	1.5	6.3	0.87	2.04
1/30	152	11	746	9	1.41	6.3	0.60	2.04
2/2	173	12.3	873	26	1.3	6.2	0.58	2.00
2/4	160	6	595	7	1.43	5.1	0.65	2.04
2/6	166	14	693	0	1.5	6.5	0.73	2.04
2/9	147	23	715	5	1.4	5.8	0.56	2.11
2/11	154	15.5	639	0	1.5	6.4	0.73	2.04
2/13	161	16	708	5	1.4	6.3	0.67	2.10
2/16	171.7	16	753	2	1.475	6.3	0.68	2.05
2/20	161	8.8	663	0	1.5	6.3	0.72	2.04
2/23	138.5	24.5	676	9	1.4	6.0	0.58	2.04
2/27	141	25	685	0	1.5	6.1	0.59	2.04
N	23	23	23	23	23	23	23	23
$\bar{x}$	163.2	15.4	663.8	5.39	1.44	6.1	0.72	2.04
σ	13.84	5.46	94.9	6.28	0.07	0.27	0.11	0.04
C.V.%	8.50	35.5	14.3	116.5	4.7	4.34	15.8	2.04

TABLE A-142. TOC DATA FOR 4 DAY PHENOL UNIT

Chemical Compound: Phenol
Parameter: TOC

θ_c = 4 days
Volume of Reactor = 3.08 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/2/80	173	18	669	19	0.515	6.0	0.73	4.13
1/5	144	33	648	42	0.18	6.2	0.64	4.12
1/7	153	19	722	2	0.73	6.2	0.61	4.09
1/9	174	8	630	2	0.70	6.0	0.77	4.25
1/12	192	19	1080	4	0.75	6.2	0.52	3.95
1/14	176	21	1085	0	0.75	6.0	0.46	4.11
1/16	177	8	1005	0	0.75	6.4	0.53	4.11
1/19	173	15	1148	7	0.725	6.0	0.42	3.98
1/21	176	6	1168	0	0.75	6.4	0.45	4.11
1/23	182	12	1024	4	0.675	6.0	0.49	4.36
1/26	152	9	1239	12	0.675	6.0	0.34	4.09
1/28	156.5	15.8	1113	0	0.75	6.2	0.41	4.11
1/30	152	9	1079	14	0.642	6.2	0.41	4.11
2/2	173	25	1176	5	0.725	6.0	0.41	4.06
2/4	160	17	1113	0	0.75	6.2	0.42	4.11
2/6	166	20	1112	0	0.75	6.0	0.42	4.11
2/9	147	15	1119	4	0.725	6.4	0.39	4.08
2/11	154	20	1048	4	0.72	6.3	0.43	4.10
2/13	161	20.5	1091	5	0.71	6.2	0.43	4.12
2/16	171.7	9	1126	4	0.725	6.4	0.46	4.08
2/18	147	6	1036	0	0.75	6.4	0.42	4.11
2/20	161	10.9	942	0	0.75	6.2	0.50	4.11
2/23	138.5	26.3	827	5	0.7	6.0	0.47	4.12
2/27	141	19	1147	0	0.75	6.3	0.36	4.11
N	24	24	24	24	24	24	24	24
$\bar{x}$	162.5	15.9	1014.5	5.5	0.69	6.18	0.48	4.11
σ	13.9	6.79	175.3	9.0	0.12	0.15	0.11	0.07
C.V.%	8.6	43.7	17.3	163.6	17.2	2.5	22.2	1.8

TABLE A- 143. TOC DATA FOR 6 DAY PHENOL UNIT

Chemical Compound: Phenol θ_c = 6 days

Parameter: TOC Volume of Reactor = 3.1 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θc days
1/7/80	153	16	756	14	0.335	6.4	0.60	6.21
1/9	174	14	742	0	0.48	6.2	0.68	6.46
1/12	192	10	1031	5	0.5	6.1	0.53	5.74
1/14	176	16	1126	9	0.45	6.0	0.44	6.01
1/16	177	8	913	0	0.5	6.6	0.59	6.20
1/19	173	18	947	10	0.45	6.0	0.51	5.78
1/21	176	27	1163	0	0.5	6.3	0.44	6.20
1/23	182	12	1088	5	0.45	6.2	0.48	6.34
1/26	152	12.5	1260	0	0.475	5.9	0.33	6.53
1/28	156.5	19	1192	0	0.5	6.2	0.38	6.20
1/30	152	12.5	1375	14	0.415	6.2	0.32	6.18
2/2	173	14.6	1320	12	0.475	6.2	0.38	5.62
2/4	160	32	1250	0	0.51	6.2	0.37	6.08
2/6	166	22	1313	12	0.41	6.4	0.38	6.32
2/9	147	14	1232	5	0.46	6.0	0.33	6.29
2/11	154	21.5	1303	48	0.18	6.2	0.34	6.17
2/13	161	21	1137	7	0.15	5.2	0.34	6.28
2/16	171.7	19	1169	7	0.45	6.2	0.42	6.12
2/18	147	27	994	0	0.5	6.2	0.43	6.20
2/20	161	14.7	978	0	0.5	6.2	0.47	6.20
2/23	138.5	25	1060	7	0.44	6.0	0.36	6.27
2/27	141	13	1265	0	0.5	6.0	0.31	6.20
N	22	22	22	22	22	22	22	22
$\bar{x}$	162.9	17.7	1118.8	7.05	0.44	6.12	0.43	6.16
σ	13.9	6.02	172.7	10.24	0.10	0.26	0.10	0.21
C.V.%	8.5	34.1	15.4	145.3	21.7	4.2	23.1	3.4

TABLE A-144. COD DATA FOR 2 DAY PHENOL UNIT

Chemical Compound: Phenol

Parameter: COD

θ_c = 2 days

Volume of Reactor =3.06 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/16/80	472	35.7	598	0	1.5	6.2	2.30	2.04
1/23	486	25	736	9	1.375	6.1	1.90	2.09
1/30	443	23.5	746	9	1.41	6.3	1.76	2.04
2/4	510	43.4	595	7	1.43	5.1	2.06	2.04
2/6	530	43.4	693	0	1.5	6.5	2.34	2.04
2/13	525	25	708	5	1.4	6.3	2.20	2.10
2/20	425	18	663	0	1.5	6.3	1.90	2.04
2/27	500	10	685	0	1.5	6.1	2.10	2.04
N	8	8	8	8	8	8	8	8
$\bar{x}$	486.4	28.0	678	3.8	1.45	6.11	2.07	2.05
σ	37	11.7	55.8	4.1	0.05	0.42	0.20	0.03
C.V.%	7.6	41.8	8.2	108.3	3.6	6.9	9.8	1.22

TABLE A-145. COD DATA FOR 4 DAY PHENOL UNIT

Chemical Compound: Phenol

Parameter: COD

θ_c = 4 days

Volume of Reactor = 3.08 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θc days
1/16/80	472	51.8	1005	0	0.75	6.4	1.41	4.11
1/23	486	25	1024	4	0.675	6.0	1.33	4.36
1/30	443	23.5	1079	14	0.642	6.2	1.19	4.11
2/4	510	31.6	1113	0	0.75	6.2	1.33	4.11
2/6	530	31.6	1112	0	0.5	6.0	1.34	4.11
2/13	525	19	1091	5	0.71	6.2	1.39	4.12
2/20	425	15	942	0	0.75	6.2	1.31	4.11
2/27	500	11	1147	0	0.75	6.3	1.28	4.11
N	8	8	8	8	8	8	8	8
$\bar{x}$	486.4	26.1	1064.1	2.88	0.69	6.19	1.32	4.14
σ	37	12.5	66.8	4.84	0.09	0.13	0.07	0.09
C.V.%	7.6	47.7	6.3	168.1	12.4	2.2	5.0	2.1

TABLE A-146. COD DATA FOR 6 DAY PHENOL UNIT

Chemical Compound: Phenol θ_c = 6 days

Parameter: COD Volume of Reactor = 3.1 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/16/80	472	27.8	913	0	0.5	6.6	1.58	6.20
1/23	486	37.4	1088	5	0.45	6.2	1.29	6.34
1/30	443	35.3	1375	14	0.415	6.2	0.93	6.18
2/4	510	43.4	1250	0	0.5	6.2	1.18	6.07
2/6	530	27.7	1313	12	0.41	6.4	1.20	6.32
2/13	525	22	1137	7	0.45	5.2	1.12	6.28
2/20	425	21	978	0	0.5	6.2	1.25	6.20
2/27	500	11	1265	0	0.5	6.0	1.10	6.20
N	8	8	8	8	8	8	8	8
$\bar{x}$	486.4	28.2	1164.9	4.75	0.47	6.13	1.21	6.22
σ	37	10.2	154.2	5.43	0.04	0.39	0.18	0.09
C.V.%	7.6	36	13.2	114.3	8.22	6.3	15.1	1.4

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TABLE A-147. BOD5 DATA FOR 2 DAY 1,2-DICHLOROETHANE, 1,2-DICHLOROBENZENE AND PHENOL COMBINED UNIT

Chemical Compound: Combined - 1,2 Dichloroethane
1,2 Dichlorobenzene
Phenol

θ_c = 2 days

Parameter: BOD_5

Volume of Reactor = 3.05 liters

Date	Se mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F	F/M ml/min	θ_c days
1/2/80	325	1.65	1243	16.0	1.4	6.2	0.77	2.04
1/5	270	2.4	872	12	1.4	6.2	0.91	2.03
1/7	256	1.9	1196	6	1.46	6.2	0.63	2.04
1/9	290	2.2	946	10	1.4	6.2	0.90	2.06
1/12	298	3.0	1577	2	1.49	6.2	0.55	2.03
1/14	270	6.4	1770	4	1.48	6.2	0.45	2.04
1/16	285	3.0	1373	12	1.4	6.2	0.61	2.08
1/19	258	1.4	2006	42	1.34	6.2	0.38	2.03
1/21	281	2.75	1980	4	1.48	6.2	0.41	2.04
1/23	292	3.7	1835	12	1.45	6.2	0.47	2.03
1/26	275	2.5	1047	5	1.46	6.2	0.77	2.04
1/28	298	1.6	1311	10	1.43	6.2	0.67	2.05
1/30	220	2.0	1082	14	1.40	6.2	0.60	2.04
2/2	268	3.0	898	3	1.47	6.2	0.87	2.04
2/4	278	3.0	1245	2	1.5	6.2	0.65	2.02
2/6	258	2.1	1100	2	1.49	6.2	0.69	2.03
2/9	245	2.9	893	2	1.485	6.2	0.80	2.03
2/11	250	2.0	1681	2	1.492	6.2	0.44	2.03
2/13	278	1.9	1021	4	1.479	6.2	0.80	2.02
2/16	210	1.3	974	1	1.493	6.2	0.63	2.03
2/18	220	1.77	1478	2	1.491	6.2	0.44	2.03
2/20	221	1.62	1126	2	1.488	6.2	0.57	2.03
2/23	265	2.6	1091	4	1.47	6.2	0.71	2.04
2/25	297	3.55	1584	1	1.495	6.2	0.55	2.03
2/27	286	3.4	1408	4	1.477	6.2	0.59	2.04
N	25	25	25	25	25	25	25	25
$\bar{x}$	267.8	2.55	1309.5	7.12	1.46	6.2	0.63	2.04
σ	27.8	1.03	339.5	8.39	0.04	0	0.15	0.01
C.V.%	10.4	40.6	25.9	117.9	2.9	0	24.1	0.58

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TABLE A-148. BOD$_5$ DATA FOR 4 DAY 1,2-DICHLOROETHANE, 1,2-DICHLOROBENZENE AND PHENOL COMBINED UNIT

Chemical Compound: Combined - 1,2 Dichloroethane
1,2 Dichlorobenzene
Phenol

θ_c = 4 days

Parameter: BOD$_5$

Volume of Reactor = 3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θc days
1/2/80	325	1.75	1710	12.0	0.69	6.2	0.556	4.08
1/5	270	1.2	1356	10	0.68	6.2	0.583	4.12
1/7	256	1.2	1306	8	0.71	6.2	0.574	4.01
1/9	290	1.1	1260	4	0.70	6.2	0.674	4.20
1/12	298	1.4	1260	2	0.73	6.2	0.69	4.10
1/14	270	1.8	1534	33	0.57	6.2	0.51	4.07
1/16	285	2.0	1158	35	0.50	6.2	0.72	4.04
1/19	258	1.7	968	72	0.09	6.2	0.78	4.08
1/21	281	3.6	968	70	0.378	6.2	0.85	3.06
1/23	292	2.5	1052	58	0.27	6.2	0.81	4.08
1/26	275	3.1	906	55	0.226	6.2	0.89	4.04
1/28	298	1.9	1126	33	0.50	6.2	0.77	4.08
1/30	220	0.3	1188	30	0.54	6.2	0.54	4.06
2/2	268	3.5	1487	16	0.662	6.2	0.53	4.06
2/4	278	4.3	1404	2	0.739	6.2	0.58	4.06
2/6	258	2.2	1320	35	0.52	6.2	0.57	4.11
2/9	245	1.6	2209	42	0.588	6.2	0.32	4.09
2/11	250	1.5	1170	2	0.736	6.2	0.63	4.07
2/13	278	2.8	1294	12	0.671	6.2	0.63	4.08
2/16	210	3.5	1602	1	0.745	6.2	0.38	4.07
2/18	220	3.9	2024	8	0.718	6.2	0.32	4.06
2/20	221	2.55	1672	1	0.745	6.2	0.39	4.07
2/23	265	5.0	2024	14	0.689	6.2	0.38	4.09
2/25	297	6.3	1707	1	0.745	6.2	0.51	4.08
2/27	286	3.4	1890	11	0.705	6.2	0.44	4.06
N	25	25	25	25	25	25	25	25
$\bar{x}$	267.8	2.7	1423.8	22.7	0.59	6.2	0.59	4.04
σ	27.8	1.25	348.1	21.9	0.18	0	0.16	0.20
C.V.%	10.4	46.4	24.5	96.6	30.0	0	26.9	5.01

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TABLE A-149. BOD$_5$ DATA FOR 6 DAY 1,2-DICHLOROETHANE, 1,2-DICHLOROBENZENE AND PHENOL COMBINED UNIT

Chemical Compound: Combined - 1,2 Dichloroethane
1,2 Dichlorobenzene
Phenol
θ_c = 6 days

Parameter: BOD$_5$
Volume of Reactor = 2.97 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/2/80	325	2.25	1852	11.0	0.45	6.2	0.53	5.94
1/5	270	1.8	1664	28	0.35	6.2	0.488	6.01
1/7	256	1.35	1658	10	0.44	6.2	0.464	6.05
1/9	290	1.1	1380	2	0.48	6.2	0.63	6.03
1/12	298	1.5	1218	2	0.48	6.2	0.74	6.01
1/14	270	2.0	1162	5	0.46	6.2	0.70	5.98
1/16	285	2.5	1024	26	0.26	6.2	0.84	6.19
1/19	258	1.2	1994	123	0	6.2	0.39	5.39
1/21	281	1.4	1091	18	0.362	6.2	0.77	5.90
1/26	275	2.7	1179	19	0.36	6.2	0.70	5.96
1/28	298	2	1795	25	0.40	6.2	0.50	5.73
1/30	220	3.35	933	16	0.354	6.2	0.71	5.93
2/2	268	3	1100	16	0.376	6.2	0.73	5.94
2/4	278	3	1320	2	0.5	6.2	0.63	5.79
2/6	258	1.8	1866	33	0.346	6.2	0.42	5.97
2/9	245	3	1417	2	0.489	6.2	0.52	5.93
2/11	250	1.5	1091	2	0.486	6.2	0.69	5.92
2/13	278	3.0	2024	21	0.411	6.2	0.41	5.95
2/16	210	2.5	1751	2	0.491	6.2	0.36	5.93
2/18	220	3.75	2235	4	0.483	6.2	0.30	5.96
2/20	221	3.2	1909	2	0.492	6.2	0.35	5.93
2/23	265	4.2	1920	12	0.445	6.2	0.41	5.96
2/25	297	4.4	1936	6	0.473	6.2	0.46	5.95
2/27	286	2.3	2279	9	0.467	6.2	0.38	5.94
N	24	24	24	24	24	24	24	24
$\bar{x}$	266.8	2.45	1541.6	16.5	0.41	6.2	0.55	5.93
σ	27.99	0.91	401.5	24.14	0.11	0	0.16	0.14
C.V.%	10.5	37.3	26.0	146.3	25.9	0	28.2	2.4

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TABLE A-150. TOC DATA FOR 2 DAY 1,2-DICHLOROETHANE, 1,2-DICHLOROBENZENE AND PHENOL COMBINED UNIT

Chemical Compound: Combined - 1,2 Dichloroethane
1,2 Dichlorobenzene
Phenol

θ_c = 2 days

Parameter: TOC

Volume of Reactor = 3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/2/80	177	20	1243	16	1.4	6.2	0.42	2.04
1/5	159	18	872	12	1.4	6.2	0.53	2.03
1/7	158	21	1196	6	1.46	6.2	0.39	2.04
1/9	166	13	946	10	1.4	6.2	0.51	2.06
1/12	217	10	1577	2	1.49	6.2	0.40	2.03
1/14	186	13	1770	4	1.48	6.2	0.31	2.04
1/16	193	23	1373	12	1.4	6.2	0.41	2.08
1/19	189	9	2006	42	1.34	6.2	0.28	2.03
1/21	198	21	1980	4	1.48	6.2	0.29	2.04
1/25	187	10	1835	12	1.45	6.2	0.29	2.03
1/26	176	23	1047	5	1.46	6.2	0.49	2.04
1/28	187	19	1311	10	1.43	6.2	0.42	2.05
1/30	166	12.5	1082	14	1.4	6.2	0.45	2.04
2/2	208	13.6	896	3	1.47	6.2	0.68	2.04
2/4	174	17	1245	2	1.5	6.2	0.41	2.02
2/6	163	19	1100	2	1.49	6.2	0.43	2.03
2/9	163	28	891	2	1.485	6.2	0.54	2.03
2/11	163	30	1681	2	1.492	6.2	0.28	2.03
2/13	166	26	1021	4	1.479	6.2	0.48	2.02
2/16	190	14	974	1	1.493	6.2	0.57	2.03
2/18	142	10	1478	2	1.491	6.2	0.28	2.03
2/20	166	16.5	1126	2	1.488	6.2	0.43	2.03
2/23	193	28	1091	4	1.47	6.2	0.52	2.04
2/25	165	24	1584	1	1.495	6.2	0.31	2.03
2/27	156	22	1408	4	1.477	6.2	0.32	2.04
N	25	25	25	25	25	25	25	25
$\bar{x}$	176.3	18.4	1309.5	7.12	1.46	0	0.42	2.04
σ	17.5	6.1	339.5	8.39	0.04	0	0.10	0.01
C.V.%	9.9	33.0	25.9	117.9	2.9	0	24.9	0.58

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TABLE A-151. TOC DATA FOR 4 DAY 1,2-DICHLOROETHANE, 1,2-DICHLOROBENZENE AND PHENOL COMBINED UNIT

Chemical Compound: Combined - 1,2 Dichloroethane θ_c = 4 days
1,2 Dichlorobenzene
Phenol
Parameter: TOC Volume of Reactor = 3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
1/2 /80	177	18	1710	12	0.69	6.2	0.30	4.08
1/5	159	19	1356	10	0.68	6.2	0.343	4.12
1/7	158	17	1306	8	0.71	6.2	0.35	4.01
1/9	166	9	1260	4	0.70	6.2	0.39	4.20
1/12	217	5	1260	2	0.73	6.2	0.50	4.10
1/14	186	8	1534	33	0.57	6.2	0.35	4.07
1/16	193	24	1158	35	0.50	6.2	0.49	4.04
1/19	189	11	968	72	0.09	6.2	0.57	4.08
1/21	198	20	968	70	0.378	6.2	0.60	3.06
1/23	187	8	1052	58	0.27	6.2	0.52	4.08
1/26	176	19	906	55	0.226	6.2	0.57	4.04
1/28	187	16	1126	33	0.50	6.2	0.49	4.08
1/30	166	18	1188	30	0.54	6.2	0.41	4.06
2/2	208	19.2	1487	16	0.662	6.2	0.41	4.06
2/4	174	13	1402	2	0.739	6.2	0.36	4.06
2/6	163	17	1320	35	0.52	6.2	0.36	4.11
2/9	163	27	2209	42	0.588	6.2	0.22	4.09
2/11	163	30	1170	2	0.736	6.2	0.41	4.07
2/13	166	26.5	1294	12	0.671	6.2	0.38	4.08
2/16	190	15	1602	1	0.745	6.2	0.35	4.07
2/18	142	30	2024	8	0.718	6.2	0.21	4.06
2/20	166	20	1672	1	0.745	6.2	0.29	4.07
2/23	193	36	2024	14	0.689	6.2	0.28	4.09
2/25	165	26	1707	1	0.745	6.2	0.28	4.08
2/27	156	21	1890	11	0.704	6.2	0.24	4.06
N	25	25	25	25	25	25	25	25
$\bar{x}$	176.3	18.9	1423.8	22.7	0.59	6.2	0.39	4.04
σ	17.5	7.5	348.1	21.9	0.18	0	0.11	0.04
C.V.%	9.9	39.6	24.5	96.6	30.0	0	27.3	5.01

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TABLE A-152. TOC DATA FOR 6 DAY 1,2-DICHLOROETHANE, 1,2-DICHLOROBENZENE AND PHENOL COMBINED UNIT

Chemical Compound: Combined - 1,2 Dichloroethane, 1,2 Dichlorobenzene, Phenol

θ_c = 6 days

Parameter: TOC

Volume of Reactor = 2.97 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/2/80	177	18	1852	11	0.45	6.2	0.29	5.94
1/5	159	22	1664	28	0.35	6.2	0.29	6.01
1/7	158	14	1658	10	0.44	6.2	0.29	6.05
1/9	166	15	1380	2	0.48	6.2	0.36	6.03
1/12	217	12	1218	2	0.48	6.2	0.54	6.01
1/14	186	19	1162	5	0.46	6.2	0.48	5.98
1/16	193	19	1024	26	0.26	6.2	0.57	6.19
1/19	189	20	1094	123	0	6.2	0.28	5.39
1/21	198	23	1091	18	0.362	6.2	0.55	5.90
1/26	176	22	1179	19	0.36	6.2	0.45	5.96
1/28	187	23.3	1795	25	0.40	6.2	0.31	5.73
1/30	166	16.5	933	16	0.354	6.2	0.53	5.93
2/2	208	26	1100	16	0.376	6.2	0.57	5.94
2/4	174	19	1320	2	0.5	6.2	0.40	5.79
2/6	163	23	1866	33	0.346	6.2	0.26	5.97
2/9	163	32	1417	2	0.489	6.2	0.35	5.93
2/11	163	28.5	1091	2	0.486	6.2	0.45	5.92
2/13	166	26.5	2024	21	0.411	6.2	0.25	5.95
2/16	190	14.5	1751	2	0.491	6.2	0.33	5.93
2/18	142	24	2235	4	0.483	6.2	0.19	5.96
2/20	166	14.6	1909	2	0.492	6.2	0.26	5.93
2/23	193	32	1920	12	0.445	6.2	0.30	5.96
2/25	165	25	1936	6	0.473	6.2	0.26	5.95
2/27	156	19	2279	9	0.467	6.2	0.21	5.94
N	24	24	24	24	24	24	24	24
$\bar{x}$	175.9	21.16	1541.6	16.5	0.41	6.2	0.37	5.93
σ	17.76	5.36	40.5	24.14	0.11	0	0.12	0.14
C.V.%	10.1	25.3	26.0	146.3	25.9	0	32.6	2.4

TABLE A-153. COD DATA FOR 2 DAY 1,2-DICHLOROETHANE, 1,2-DICHLOROBENZENE AND PHENOL COMBINED UNIT

Chemical Compound: Combined - 1,2 Dichloroethane θ_c = 2 days
1,2 Dichlorobenzene
Phenol
Parameter: COD Volume of Reactor = 3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/9/80	508	88	946	10	1.4	6.2	1.57	2.06
1/16	424.6	55.5	1373	12	1.4	6.2	0.91	2.08
1/23	565	37.4	1835	12	1.45	6.2	0.90	2.03
1/30	419.5	20	1082	14	1.4	6.2	1.13	2.04
2/6	368	39.5	1100	2	1.49	6.2	0.98	2.03
2/13	448	41	1021	4	1.479	6.2	1.28	2.02
2/20	400	12	1126	2	1.488	6.2	1.04	2.03
2/27	500	20	1408	4	1.477	6.2	1.04	2.04
N	8	7	8	8	8	8	8	8
$\bar{x}$	454.1	32.2	1236.4	7.5	1.45	6.2	1.11	2.04
σ	61.3	14.24	273.3	4.69	0.04	0	0.21	0.02
C.V.%	13.5	44.2	22.1	62.5	2.7	0	19.0	0.9

TABLE A-154. COD DATA FOR 4 DAY 1,2-DICHLOROETHANE, 1,2-DICHLOROBENZENE AND PHENOL COMBINED UNIT

Chemical Compound: Combined - 1,2 Dichloroethane
1,2 Dichlorobenzene
Phenol

θ_c = 4 days

Parameter: COD

Volume of Reactor = 3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/9/80	508	22	1260	4	0.7	6.2	1.18	4.20
1/16	424.6	23.9	1158	35	0.5	6.2	1.07	4.04
1/23	565	37.4	1052	58	0.27	6.2	1.57	4.08
1/30	419.5	12	1188	30	0.54	6.2	1.03	4.06
2/6	368	43.4	1320	35	0.52	6.2	0.82	4.11
2/13	448	32	1294	12	0.671	6.2	1.01	4.08
2/20	400	20	1672	1	0.745	6.2	0.70	4.08
2/27	500	4	1890	11	0.704	6.2	0.77	4.06
N	8	8	8	8	8	8	8	8
$\bar{x}$	454.1	24.3	1354.3	23.3	0.58	6.2	1.02	4.09
σ	61.3	12.2	265.7	18.4	0.15	0	0.26	0.05
C.V.%	13.5	50.3	19.6	78.8	25.5	0	25.5	1.14

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TABLE A-155. COD DATA FOR 6 DAY 1,2-DICHLOROETHANE, 1,2-DICHLOROBENZENE AND PHENOL COMBINED UNIT

Chemical Compound: Combined - 1,2 Dichloroethane, 1,2 Dichlorobenzene, Phenol
θ_c = 6 days
Parameter: COD
Volume of Reactor = 2.97 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
1/9/80	508	44	1380	2	0.48	6.2	1.11	6.03
1/16	424.6	51.6	1024	26	0.26	6.2	1.25	6.19
1/30	419.5	20	933	16	0.354	6.2	1.35	5.93
2/6	368	15.8	1866	33	0.346	6.2	0.59	5.97
2/13	448	30	2024	21	0.411	6.2	0.67	5.95
2/20	400	31	1909	2	0.492	6.2	0.63	5.93
2/27	500	13	2279	9	0.467	6.2	0.66	5.94
N	7	7	7	7	7	7	7	7
$\bar{x}$	438.3	29.34	1630.7	15.6	0.40	6.2	0.89	5.99
σ	47.6	13.43	484.1	11.1	0.08	0	0.31	0.09
C.V.%	10.9	45.8	29.7	71.1	19.9	0	34.4	1.5

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TABLE A- 156. BOD_5 DATA FOR 2 DAY 2,4-DINITROPHENOL UNIT

Chemical Compound: Dinitrophenol θ_c = 2 days

Parameter: BOD_5 Volume of Reactor = 3.06 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
4/6/81	215	5.07	276	48	0	6.4	2.39	1.87
4/8	290	5.1	398	70	0	6.2	2.16	1.92
4/10	252	5.4	416	76	0	6.2	1.80	1.82
4/13	261	3.09	488	14	1.200	6.2	1.59	2.11
4/15	230	6.55	686	0	1.500	6.0	0.97	2.0
4/17	223	2.45	752	0	1.450	6.2	0.88	2.07
4/20	260	0.74	856	2	1.450	6.2	0.90	2.04
4/22	258	1.9	868	0	1.450	5.9	0.84	2.05
4/24	275	2.8	720	0	1.500	6.2	1.14	2.0
4/27	240	2.89	752	146	0	6.3	0.97	1.70
4/29	243	2.51	699	137	0	6.6	1.10	1.61
5/1	238	4.91	652	524	0	6.2	1.09	0.42
5/4	217	3.54	780	48	0.950	6.4	0.84	2.06
5/6	240	3.76	905	4	1.425	6.3	0.80	2.00
5/8	261	2.02	692	196	0	5.0	0.91	1.33
5/11	226	2.38	564	148	0	6.2	1.19	1.28
5/13	237	2.02	746	59	0.980	5.5	0.84	2.0
5/15	214	4.31	540	344	0	6.2	1.18	0.53
5/17	235	3.2	793	5	1.460	6.2	0.88	2.0
5/18	223	2.86	856	32	1.100	6.2	0.78	2.09
5/22	290	3.90	786	0	1.500	6.4	1.13	2.0
5/25	232	3.86	580	252	0	6.2	1.19	0.78
5/26	275	3.75	1043	160	0.420	6.5	0.82	2.0
5/27	252	4.20	1317	382	0	6.4	0.59	1.16
5/28	165	3.92	564	40	0.930	6.2	0.87	2.0
N	25	25	25	25	25	25	25	25
$\bar{x}$	242.1	3.48	709.2	107.5	692.6	6.17	1.11	1.71
σ	27.1	1.30	216.2	138.6	670.2	0.32	0.43	0.50
C.V.%	11.2	37.6	30.5	128.9	96.8	5.2	38.7	29.2

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TABLE A-157. BOD$_5$ DATA FOR 4 DAY 2,4-DINITROPHENOL UNIT

Chemical Compound: Dinitrophenol θ_c = 4 days

Parameter: BOD$_5$ Volume of Reactor = 3.08 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
4/6/81	251	3.36	664	30	0.360	6.2	1.126	4.02
4/8	290	4.8	911	3	0.720	6.2	0.947	4.00
4/10	252	4.5	819	42	0.315	6.4	0.945	4.00
4/13	261	3.0	872	16	0.600	6.2	0.89	3.99
4/15	230	4.0	1132	0	0.680	6.2	0.60	4.00
4/17	223	2.48	916	8	0.650	6.1	0.713	4.16
4/20	260	2.31	1098	12	0.660	6.2	0.705	4.00
4/22	258	3.40	1100	16	0.650	6.4	0.721	4.00
4/24	275	4.10	1160	0	0.750	6.4	0.728	4.00
4/27	240	2.30	1412	10	0.670	6.1	0.498	4.12
4/29	243	1.50	1540	2	0.705	6.3	0.477	4.00
5/1	238	4.91	1788	8	0.700	6.2	0.396	4.07
5/4	217	2.09	2108	4	0.750	6.3	0.312	3.92
5/6	240	2.15	1973	182	0	6.6	0.368	3.15
5/8	261	2.25	2225	63	0.470	6.6	0.371	4.00
5/11	226	2.94	1116	0	0.750	6.2	0.603	4.00
5/13	237	2.30	1727	7	0.670	6.4	0.422	4.40
5/15	214	3.66	1828	108	0.240	6.3	0.354	3.94
5/17	235	2.6	2589	214	0.250	6.4	0.279	4.00
5/18	223	2.6	2264	372	0	6.2	0.293	2.01
5/20	306	3.65	1360	856	0	6.4	0.691	0.51
5/22	290	3.2	3681	22	0.695	6.4	0.242	4.00
5/25	232	2.58	808	18	0.570	6.1	0.843	4.05
5/26	275	2.9	1675	86	0.345	6.2	0.489	4.00
5/27	252	2.5	1846	14	0.695	6.0	0.393	4.00
5/28	165	4.88	804	236	0	6.1	0.601	1.16
N	26	26	26	26	26	26	26	26
$\bar{x}$	244.6	3.11	1516	89.6	475.8	6.27	0.577	3.67
σ	29.3	0.95	692	181.6	289.9	0.151	0.239	0.94
C.V.%	12	30.55	45.7	203	60.9	2.4	41.5	25.77

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TABLE A-158. BOD_5 DATA FOR 6 DAY 2,4-DINITROPHENOL UNIT

Chemical Compound: Dinitrophenol

θ_c = 6 days

Parameter: BOD_5

Volume of Reactor = 3.10 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
4/6/81	251	4.04	1108	24	0.300	6.2	0.67	6.16
4/8	290	1.0	1243	2	0.480	6.3	0.70	6.00
4/10	252	2.9	1226	34	0.250	6.3	0.62	6.00
4/13	261	2.22	1268	36	0.270	6.3	0.62	5.77
4/15	230	2.06	1128	0	0.425	6.2	0.61	6.00
4/17	223	2.55	1384	46	0.200	6.3	0.49	6.06
4/20	260	2.36	1400	16	0.400	6.2	0.55	6.03
4/22	258	5.20	1328	40	0.215	6.6	0.62	6.00
4/24	275	6.80	1488	12	0.440	6.2	0.55	6.00
4/27	240	2.89	1460	30	0.330	6.3	0.50	5.89
4/29	243	1.45	1631	9	0.435	6.6	0.47	6.00
5/1	238	1.63	1976	10	0.450	6.3	0.36	6.08
5/4	217	2.91	2620	4	0.500	6.3	0.251	5.85
5/6	240	2.10	2219	0	0.500	6.3	0.327	6.00
5/8	261	1.85	2322	4	0.450	6.2	0.335	6.00
5/11	226	4.82	2136	4	0.480	6.2	0.315	6.05
5/13	237	1.87	2276	17	0.430	6.6	0.330	6.00
5/15	214	2.47	1956	32	0.330	6.3	0.331	6.07
5/17	235	1.60	2077	75	0.190	6.4	0.348	6.00
5/18	223	1.45	1956	80	0.110	6.2	0.339	6.03
5/20	306	2.9	2192	100	0.125	6.3	0.422	6.00
5/22	290	5.6	2175	314	0	6.1	0.390	2.31
5/25	232.	3.94	1028	50	0.80	6.4	0.695	6.06
5/26	275	7.0	1532	27	0.355	6.3	0.543	6.00
5/27	252	3.0	1347	120	0	6.2	0.557	4.06
5/28	165	4.96	1032	10	0.410	6.4	0.491	6.06
N	26	26	26	26	26	26	26	26
$\bar{x}$	244.6	3.13	1673.4	42.15	313.6	6.31	0.478	5.78
σ	29.3	1.66	473.6	63.79	156.2	0.129	0.135	0.808
C.V.%	12.0	53.13	28.3	151.3	49.8	2.05	28.33	13.99

TABLE A-159. TOC DATA FOR 2 DAY 2,4-DINITROPHENOL UNIT

Chemical Compound: Dinitrophenol θ_c = 2 days

Parameter: TOC Volume of Reactor = 3.06 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
4/6/81	191	5.5	276	48	0	6.4	2.12	1.87
4/8	165	13	398	70	0	6.2	1.23	1.92
4/10	166	18	416	76	0	6.2	1.18	1.82
4/13	145	18	488	14	1.200	6.2	0.88	2.11
4/15	203	2.5	686	0	1.500	6.0	0.85	2.0
4/17	148	20.5	752	0	1.450	6.2	0.59	2.07
4/20	166	13.4	856	2	1.450	6.2	0.58	2.04
4/22	204	17.4	868	0	1.450	5.9	0.67	2.05
4/24	204	18	720	0	1.500	6.2	0.84	2.0
4/27	283	14.6	752	146	0	6.3	1.14	1.70
4/29	209	10.9	699	137	0	6.6	0.95	1.61
5/1	204	13.1	652	524	0	6.2	0.93	0.42
5/4	152	11.4	780	48	0.950	6.4	0.60	2.06
5/6	212	11.8	905	4	1.425	6.3	0.71	2.0
5/8	231	14.2	692	196	0	5.0	0.80	1.33
5/11	208	12.4	564	148	0	6.2	1.10	1.28
5/13	209	10.9	746	59	0.980	5.5	0.74	2.00
5/15	208	15.4	540	344	0	6.2	1.15	0.53
5/17	227	15.1	793	5	1.460	6.2	0.852	2.0
5/18	217	13.1	856	32	1.100	6.2	0.754	2.09
5/20	243	42.3	914	139	0.317	6.0	0.766	2.0
5/22	205	10.8	786	0	1.500	6.4	0.801	2.0
5/25	225	17.1	580	252	0	6.2	1.154	2.78
5/26	225	20.6	1043	160	0.420	6.5	0.673	2.0
5/27	214	20.	1317	382	0	6.4	0.499	1.16
5/28	217	21.8	564	40	0.930	6.2	1.145	2.0
N	26	26	26	26	26	26	26	26
$\bar{x}$	203.11	15.45	717	108.7	678	6.16	0.911	1.72
σ	31.22	7.08	215	136	660	0.316	0.325	0.527
C.V.%	15.37	45.87	30.06	125	97.4	5.1	35.69	30.6

TABLE A-160. TOC DATA FOR 4 DAY 2,4-DINITROPHENOL UNIT

Chemical Compound: Dinitrophenol θ_c = 4 days

Parameter: TOC Volume of Reactor = 3.08 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
4/6/81	191	16	664	30	0.360	6.2	0.85	4.02
4/8	165	28	911	3	0.720	6.2	0.54	4.00
4/10	166	14	819	42	0.315	6.4	0.62	4.00
4/13	145	11	872	16	0.600	6.2	0.49	3.99
4/15	203	4.2	1135	0	0.680	6.2	0.53	4.00
4/17	148	32	916	8	0.650	6.1	0.47	4.16
4/20	166	22.7	1098	12	0.660	6.2	0.45	4.00
4/22	204	26.8	1100	16	0.650	6.4	0.57	4.00
4/24	204	22.8	1160	0	0.750	6.4	0.54	4.00
4/27	283	18.1	1412	10	0.670	6.1	0.59	4.12
4/29	209	15.3	1540	2	0.705	6.3	0.41	4.00
5/1	204	9.1	1788	8	0.700	6.2	0.34	4.07
5/4	152	8.9	2108	4	0.750	6.3	0.22	3.92
5/6	212	8.4	1973	182	0	6.6	0.34	3.15
5/8	231	13.0	2228	63	0.470	6.6	0.33	4.00
5/11	208	12.8	1116	0	0.750	6.2	0.55	4.00
5/13	209	13.3	1727	7	0.670	6.4	0.37	4.40
5/15	208	17.8	1828	108	0.240	6.3	0.34	3.94
5/17	227	6	2589	214	0. 25	6.4	0.269	4.00
5/18	217	14	2264	372	0	6.2	0.285	2.01
5/20	243	13	1360	856	0	6.4	0.549	0.51
5/22	205	10.3	3681	22	0.695	6.4	0.171	4.00
5/25	225	18.8	808	18	0.570	6.1	0.815	4.05
5/26	225	18.6	1675	86	0.345	6.2	0.400	4.00
5/27	214	14.8	1846	14	0.695	6.0	0.334	4.00
5/28	217	23.5	804	236	0	6.1	0.790	1.16
N	26	26	26	26	26	26	26	26
$\bar{x}$	203.11	15.89	1516	89.6	475.8	6.27	0.467	3.67
σ	31.22	6.88	692	181.6	289.9	0.151	0.175	0.94
C.V.%	15.37	43.30	45.7	203	60.9	2.4	37.65	25.77

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TABLE A- 161. TOC DATA FOR 6 DAY 2,4-DINITROPHENOL UNIT

Chemical Compound: Dinitrophenol θ_c = 6 days

Parameter: TOC Volume of Reactor = 3.10 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
4/6/81	191	19	1108	24	0,3	6.2	0.51	6.16
4/8	165	2	1243	2	0.048	6.3	0.40	6.00
4/10	166	16.5	1226	34	0.25	6.3	0.409	6.00
4/13	145	11	1268	36	0.270	6.3	0.35	5.77
4/15	203	18.5	1128	0	0.425	6.2	0.54	6.00
4/17	148	19	1384	46	0.200	6.3	0.32	6.06
4/20	166	15.4	1400	16	0.400	6.2	0.35	6.03
4/22	204	15.3	1328	40	0.215	6.6	0.49	6.00
4/24	204	20.2	1488	12	0.440	6.2	0.41	6.00
4/27	283	18	1460	30	0.330	6.3	0.59	5.89
4/29	209	8	1631	99	0.435	6.6	0.41	6.00
5/1	204	9	1976	10	0.450	6.3	0.31	6.08
5/4	152	9.4	2620	4	0.500	6.3	0.18	5.85
5/6	212	6.5	2219	0	0.500	6.3	0.289	6.00
5/8	231	14.9	2322	4	0.450	6.2	0.296	6.00
5/11	208	14.6	2136	4	0.480	6.2	0.29	6.05
5/13	209	10.6	2276	17	0.430	6.6	0.291	6.00
5/15	208	13.7	1956	32	0.330	6.3	0.32	6.07
5/17	227	11.2	2077	75	0.190	6.4	0.336	6.00
5/18	217	11.3	1956	80	0.110	6.2	0.330	6.03
5/20	243	12.4	2192	100	0.125	6.3	0.335	6.00
5/22	205	18.4	2175	314	9	6.1	0.276	2.31
5/25	225	18.4	1028	50	0.80	6.4	0.672	6.06
5/26	225	24.1	1532	27	0.355	6.3	0.444	6.00
5/27	214	16.8	1347	120	0	6.2	0.473	4.06
5/28	217	22.3	1032	10	0.410	6.4	0.646	6.06
N	26	26	26	26	26	26	26	26
$\bar{x}$	203.11	14.4	1673.4	42.15	313.6	6.31	0.394	5.78
σ	31.22	5.16	473.6	63.79	156.2	0.129	0.121	0.808
C.V.%	15.37	35.9	28.3	151.3	49.8	2.05	30.8	13.99

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TABLE A-162. COD DATA FOR 2 DAY 2,4-DINITROPHENOL UNIT

Chemical Compound: Dinitrophenol

θ_c = 2 days

Parameter: COD

Volume of Reactor = 3.06 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
4/10/81	580	68	416	76	0	6.2	4.15	1.82
4/17	560	46	752	0	1.45	6.2	2.22	2.07
4/24	440	48	720	0	1.50	6.2	1.82	2.0
5/1	510	40	652	524	0	6.2	2.33	0.42
5/8	580	35	692	196	0	5.0	2.01	1.33
5/15	610	47	540	344	0	6.2	3.36	0.53
5/22	550	43	786	0	1.50	6.4	2.15	2.0
5/26	560	48	1043	160	0.42	6.5	--	2.0
5/28	580	39	564	40	0.93	6.2	3.06	2.0
N	8	8	8	8	8	8	8	8
$\bar{x}$	551.25	45.75	640.2	147.5	672.5	6.07	2.63	1.52
σ	53.56	10.02	124.82	194.4	741.5	0.439	0.806	0.68
C.V.%	9.7	21.9	19.5	131.8	110.3	7.24	30.67	45.2

TABLE A- 163. COD DATA FOR 4 DAY 2,4-DINITROPHENOL UNIT

Chemical Compound: Dinitrophenol θ_c = 4 days

Parameter: COD Volume of Reactor = 3.08 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
4/10/81	580	60	819	42	0.315	6.4	2.18	4.00
4/17	560	56	916	8	0.650	6.1	1.79	4.16
4/24	440	49	1160	0	0.750	6.4	1.17	4.0
5/1	510	38	1788	8	0.700	6.3	0.85	4.07
5/8	580	38	2228	63	0.470	6.6	0.82	4.00
5/15	610	43	1828	108	0.240	6.3	1.01	3.94
5/22	550	40	3681	22	0.695	6.4	0.46	4.00
5/26	560	42	1675	86	0.345	6.2	--	4.0
5/28	580	44	804	236	0	6.1	2.11	1.16
N	8	8	8	8	8	8	8	8
$\bar{x}$	551.25	46	1653	60.87	477.5	6.32	1.298	3.67
σ	53.56	8.29	977.95	79.33	270.4	0.166	0.64	1.01
C.V.%	9.72	18.04	59.16	130.3	56.6	2.6	49.7	27.7

TABLE A-164. COD DATA FOR 6 DAY 2,4-DINITROPHENOL UNIT

Chemical Compound: Dinitrophenol
Parameter: COD

θ_c = 6 days
Volume of Reactor = 3.10 liters

Date	Si mg/1	Se mg/1	X mg/1	Xe mg/1	Fw 1/day	F ml/min	F/M	θ_c days
4/10/81	580	66	1226	34	0.250	6.3	1.43	6.0
4/17	560	52	1384	46	0.200	6.3	1.22	6.06
4/24	440	50	1488	12	0.440	6.2	0.88	6.00
5/1	510	21	1976	10	0.450	6.3	0.78	6.08
5/8	580	43	2322	4	0.450	6.2	0.74	6.0
5/15	610	47	1956	40	0.330	6.3	0.94	6.07
5/22	550	47	2175	314	0	6.1	0.74	2.31
5/26	560	49	1532	27	0.355	6.3	--	6.0
5/28	580	51	1032	10	0.410	6.4	1.73	6.06
N	8	8	8	8	8	8	8	8
$\bar{x}$	551	47.12	1692	55	316	6.25	1.05	5.57
σ	53.56	12.55	470	7.41	159	0.091	0.37	1.32
C.V%	9.72	26.6	27.8	13.4	50.4	1.46	34.92	23.7

TABLE A- 165. BOD_5 DATA FOR 2 DAY 1,3-DICHLOROBENZENE UNIT

Chemical Control: Dichlorobenzene

θ_c = 2 days

Parameter: BOD_5

Volume of Reactor = 3.255

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
4/3/81	195	1.6	392	4	1.5	6.30	1.39	2.05
4/6	176	3.45	328	24	0.68	6.30	1.50	2.00
4/8	163	1.75	288	8	1.5	6.25	1.56	1.91
4/10	140	2.36	344	46	0.59	6.00	1.08	1.93
4/17	196.5	6	808	6	1.5	6.20	0.67	2.09
4/20	175	1.50	532	8	1.5	6.00	0.87	2.04
4/22	183	4.90	468	11	1.5	6.25	1.08	1.94
4/24	213	4.70	566	3	1.5	6.00	1.00	2.06
4/27	161	2.97	780	14	1.500	6.25	0.57	1.99
4/29	160.5	1.25	328	10	1.380	6.10	1.32	2.0
5/1	152	1.32	540	4	1.500	6.40	0.79	2.09
5/4	209	2.55	600	2	1.500	6.0	0.92	2.14
5/6	188.0	2.01	652	10	1.500	6.30	0.80	2.01
5/11	197	1.67	368	3	1.500	6.30	1.49	2.08
5/13	162	2.15	356	2	1.500	6.25	1.26	2.11
5/15	195	1.61	200	0	1.500	6.25	2.7	2.17
5/20	155	1.55	292	5	1.500	6.20	1.45	2.0
5/22	140	1.21	564	8	1.370	5.8	0.64	2.0
5/27	214.7	1.60	564	9	1.500	5.80	0.98	2.01
5/28	218	2.60	692	13	1.500	6.25	0.87	1.98
N	20	20	20	20		20	20	20
$\bar{x}$	180	2.44	483	9.5		6.16	1.15	2.03
σ	24.8	1.35	172	10.2		0.17	0.478	0.069
C.V.%	13.8	55.3	35.7	107		2.8	41.7	3.4

TABLE A-166. BOD_5 DATA FOR 4 DAY 1,3-DICHLOROBENZENE UNIT

Chemical Compound: Dichlorobenzene θ_c = 4 days

Parameter: BOD_5 Volume of Reactor

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
4/1/81	178	4.6	740	4	0.75	6.30	0.71	3.85
4/3	195	2.1	728	0	0.75	6.25	0.79	4.09
4/6	176	2.40	512	4	0.71	6.20	1.00	4.00
4/8	163	1.96	644	7	0.75	6.30	0.75	3.66
4/10	140	2.32	640	3	0.75	5.80	0.60	3.92
4/17	196.5	1.8	893	7	0.75	6.30	0.65	3.78
4/20	175	.95	992	5	0.75	6.30	0.52	3.89
4/22	183	1.33	1108	4	0.75	6.40	0.50	3.93
4/24	213	4.75	1056	5	0.75	7.00	0.66	3.81
4/27	161	1.93	1012	6	0.75	6.25	0.47	3.81
4/29	160.5	1.25	680	8	0.610	6.20	0.68	4.0
5/1	152	2.39	920	4	0.750	6.40	0.50	3.87
5/4	209	3.12	936	3	0.750	6.20	0.65	3.97
5/6	188	1.18	1016	5	0.750	6.80	0.59	3.86
5/8	127.5	1.35	924	4	0.750	6.20	0.40	3.92
5/11	197	3.29	748	0	0.750	6.25	0.77	4.09
5/13	162	2.52	1184	0	0.750	6.25	0.40	4.09
5/15	195	2.52	440	0	0.750	6.25	1.30	4.09
5/18	130	1.25	620	1	0.750	6.20	0.61	3.85
5/20	155	1.57	652	3	0.750	6.30	0.70	3.90
5/22	140	1.80	617	6	0.400	5.8	0.62	4.07
5/25	224	3.34	1136	14	0.750	6.25	0.58	3.60
5/27	214.7	1.92	940	1	0.750	5.60	0.60	4.04
5/28	218	2.53	1616	12	0.750	6.25	0.40	3.78
N	24	24	24	24	24	24	24	24
$\bar{x}$	177.2	2.25	802	4.4	0.728	6.25	0.64	3.90
σ	28.48	0.99	339	3.55	0.075	0.277	0.196	0.137
C.V.%	16.0	44	42.2	80	10.3	4.4	30.6	3.5

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TABLE A-167. BOD_5 DATA FOR 6 DAY 1,3-DICHLOROBENZENE UNIT

Chemical Compound: Dichlorobenzene

Parameter: BOD_5

θ_c = 6 days

Volume of Reactor = 3.129 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
4/1/81	178	3.4	7.2	5	0.450	7.00	0.81	6.0
4/3	195	2.2	524	40	0	6.25	1.07	4.55
4/6	176	2.7	588	12	0.470	6.30	0.87	6.0
4/8	163	1.2	440	14	0.250	6.30	1.07	5.92
4/10	140	1.3	496	50	0	5.82	0.75	4.11
4/17	196.5	1.4	570	13	0.330	6.00	0.95	6.00
4/20	175	0.9	656	122	0	6.30	0.77	2.10
4/22	183	3.34	756	117	0	6.40	0.71	2.25
4/24	213	3.45	1064	18	0.360	6.00	0.55	6.00
4/27	161	1.97	868	7	0.500	6.25	0.53	5.50
4/29	160.5	1.14	988	6	0.450	6.60	0.49	5.98
5/1	152	2.01	1132	2	0.500	6.40	0.39	6.07
5/4	209	3.5	1080	3	0.550	6.40	0.	5.48
5/6	188	1.18	1268	9	0.500	6.80	0.46	5.53
5/8	127.5	1.38	816	5	0.500	6.0	0.43	5.74
5/11	197	2.33	820	4	0.500	6.25	0.69	5.78
5/13	162	2.42	1040	0	0.500	6.25	0.45	5.26
5/15	195	2.66	768	0	0.500	6.25	0.73	6.26
5/18	130	0.70	780	2	0.550	6.40	0.49	5.49
5/20	155	0.86	964	1	0.550	6.30	0.46	5.60
5/22	140	1.50	1117	8	0.345	6.40	0.37	6.02
5/25	224	3.23	2424	9	0.500	6.25	0.27	5.89
5/27	214.7	1.89	1664	4	0.550	6.40	0.38	5.49
5/28	218	3.31	1452	12	0.500	6.25	0.43	5.49
N	24	24	24	24	24	24	24	24
$\bar{x}$	178	2.08	957.8	19.3	0.389	6.33	0.638	5.36
σ	30	0.93	434.5	33	0.193	0.238	0.30	1.09
C.V.%	16.9	45	45.3	171.2	497	3.76	47.7	20.4

TABLE A-168. TOC DATA FOR 2 DAY 1,3-DICHLOROBENZENE UNIT

Chemical Compound: Dichlorobenzene	θ_c = 2 days
Parameter: TOC	Volume of Reactor = 3.255 liters

Date	Si mg/1	Se mg/1	X mg/1	Xe mg/1	Fw 1/day	F ml/min	F/M	θ_c days
4/1/81	167	8	180	5	1.5	7.00	2.87	1.94
4/3	104	2	356	4	1.5	6.30	0.81	2.05
4/6	137	3	328	24	0.68	6.30	1.16	2.00
4/8	137	4	288	8	1.5	6.25	1.32	1.91
4/10	127	8	344	46	0.59	6.00	0.98	1.93
4/13	120	6	720	3	1.5	6.25	0.46	2.13
4/15	145	0	324	0	1.5	6.25	1.23	2.17
4/17	69	6	808	6	1.5	6.20	0.24	2.09
4/24	138	3	566	3	1.5	6.00	0.65	2.06
4/27	134	12	780	14	1.5	6.25	0.47	1.99
4/29	149	7	328	10	1.38	6.10	0.51	2.00
5/1	146	5	540	4	1.50	6.40	0.76	2.09
5/4	179	8	600	2	1.50	6.0	0.79	2.14
5/6	140	6	652	10	1.5	6.20	0.60	2.01
5/8	144	7	416	6	1.5	6.30	0.95	2.00
5/11	143	7	368	3	1.5	6.30	1.08	2.08
5/13	144	7	356	2	1.5	6.25	1.12	2.11
5/15	127	7	200	0	1.5	6.25	1.75	2.17
5/18	149	10	400	1	1.5	6.20	1.02	2.09
5/20	117	7	292	5	1.5	6.20	1.12	2.00
5/22	122	8	564	8	1.4	5.80	0.55	2.00
5/25	150	7	468	22	1.5	6.30	0.89	1.75
5/27	139	11	564	9	1.5	5.8	0.63	2.01
5/28	136	15	692	13	1.5	6.25	0.54	1.98
N	24	24	24	24	24	24	24	24
$\bar{x}$	136	6.98	464	8.67	1.41	6.21	0.95	2.03
σ	20.9	3.27	180	10.08	0.244	0.227	0.55	0.09
C.V.%	15.3	47	38.8	116.2	17.3	3.66	57.8	4.6

TABLE A-169. TOC DATA FOR 4 DAY 1,3-DICHLOROBENZENE UNIT

Chemical Compound: Dichlorobenzene

Parameter: TOC

θ_c = 4 days

Volume of Reactor = 3.065 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
4/1/81	167	1.5	740	4	0.75	6.30	0.67	3.85
4/3	104	1.6	728	0	0.75	6.25	0.42	4.09
4/6	137	0	5.12	4	0.71	6.20	0.78	4.00
4/8	137	7	664	14	0.75	6.30	0.61	3.66
4/10	127	11	640	3	0.75	5.80	0.54	3.92
4/13	120	3	564	3	0.75	6.40	0.64	3.86
4/15	144	0	468	4	0.75	6.40	0.93	3.74
4/17	70	5	893	7	0.75	6.30	0.23	3.78
4/24	138	10	1056	5	0.75	7.00	0.43	3.81
4/27	134	10	1012	6	0.75	6.25	0.39	3.84
4/29	147	4	680	8	0.61	6.20	0.64	4.00
5/1	146	3	920	4	0.75	6.40	0.48	3.87
5/4	179	8	936	3	0.75	6.20	0.56	3.97
5/6	140	6	1016	5	0.75	6.80	0.44	3.86
5/8	144	8	924	4	0.75	6.20	0.45	3.92
5/11	143	8	748	0	0.75	6.25	0.56	4.09
5/13	144	8	1184	0	0.75	6.25	0.36	4.09
5/15	127	9	440	0	0.75	6.25	0.85	4.09
5/18	149	9	620	1	0.75	6.20	0.70	3.85
5/20	119	4	652	3	0.75	6.30	0.54	3.90
5/22	122	8	617	6	1.35	5.8	0.54	4.07
5/25	150	8	1136	14	0.75	6.2	0.39	3.60
5/27	139	8	940	1	0.75	5.6	0.39	4.04
5/28	136	11	1616	12	0.75	6.25	0.25	3.78
N	24	24	24	24	24	24	24	24
$\bar{x}$	136	6.9	821	4.62	1.065	6.25	0.53	3.95
σ	20.9	3.85	270.7	4.04	1.148	0.278	0.17	0.26
C.V.%	15.4	55.9	32.9	87.5	100	4.45	33	6.6

TABLE A-170. TOC DATA FOR 6 DAY 1,3-DICHLOROBENZENE UNIT

Chemical Control: Dichlorobenzene

Parameter: TOC

θ_c = 6 days

Volume of Reactor = 3.129 liters

Date	Si mg/1	Se mg/1	X mg/1	Xe mg/1	Fw 1/day	F ml/min	F/M	θ_c days
4/3/81	104	11	524	40	0	6.25	0.57	4.55
4/6	137	3	588	12	0.47	6.30	0.68	6.00
4/8	163	7	440	14	0.25	6.30	1.07	5.92
4/10	127	12	496	50	0	5.30	0.69	4.11
4/13	120	6	560	7	0.43	6.25	0.62	5.88
4/15	145	0	429	2	0.50	6.25	0.97	5.80
4/17	70	1	570	13	0.33	6.00	0.34	6.00
4/24	138	6	1064	18	0.36	6.00	0.36	6.00
4/27	134	7	868	7	0.50	6.25	0.44	5.50
4/29	149	4	988	6	0.45	6.60	0.45	5.98
5/1	146	5	1132	2	0.50	6.40	0.38	6.07
5/4	179	7	1080	3	0.55	6.40	0.48	5.48
5/6	140	5	1268	9	0.50	6.80	0.34	5.53
5/8	144	8	816	5	0.50	6.00	0.48	5.74
5/11	143	6	820	4	0.50	6.25	0.50	5.78
5/13	144	5	1040	0	0.50	6.25	0.40	5.26
5/15	127	6	768	0	0.50	6.25	0.47	6.26
5/18	149	6	789	2	0.55	6.40	0.56	6.49
5/20	119	2	964	1	0.55	6.30	0.36	5.60
5/22	122	7	1117	8	0.35	6.40	0.32	6.02
5/25	150	7	2424	9	0.50	6.25	0.19	5.89
5/27	139	2	1664	4	0.55	6.40	0.25	5.49
5/28	136	10	1452	12	0.50	6.25	0.27	5.49
N	23	23	23	23	23	23	23	23
$\bar{x}$	137	5.81	940	10.37	0.43	6.27	0.494	5.66
σ	21.6	2.95	449.2	11.82	0.15	0.20	0.21	0.484
C.V.%	15.8	50.8	47.7	113.9	35.4	3.20	42.8	8.55

TABLE A-171. COD DATA FOR 2 DAY 1,3-DICHLOROBENZENE UNIT

Chemical Compound: Dichlorobenzene

θ_c = 2 days

Parameter: COD

Volume of Reactor = 3.255

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
4/10/81	400	68	344	46	0.590	6.00	3.09	1.93
4/24	400	27	566	3	1.50	6.00	1.88	2.06
5/1	415	19	540	4	1.500	6.25	2.12	2.09
5/8	390	18	416	6	1.500	6.20	2.57	2.00
5/15	370	18	200	0	1.500	6.25	5.11	2.17
5/22	340	23	564	8	1.370	5.8	1.54	2.0
5/28	340	19	692	13	1.50	6.25	1.36	1.98
N	7	7	7	7	7	7	7	7
$\bar{x}$	379.3	27.4	474.5	11.43	1.35	6.1	2.52	1.89
σ	30.0	18.2	165.2	15.78	0.34	0.176	1.28	0.408
C.V%	7.9	66	34.8	138	25.1	2.88	30.7	21.5

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TABLE A-172. COD DATA FOR 4 DAY 1,3-DICHLOROBENZENE UNIT

Chemical Compound: Dichlorobenzene

Parameter: COD

θ_c = 4 days

Volume of Reactor = 3.065 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
4/10/81	400	60	640	60	0.75	5.80	1.70	3.92
4/24	400	26	1056	5	0.75	7.00	1.25	3.81
5/1	415	20	920	4	0.750	6.40	1.36	3.87
5/8	390	18	924	4	0.750	6.20	1.23	3.92
5/15	370	18	440	0	0.750	6.25	2.47	4.09
5/22	340	22	617	6	0.400	5.8	1.50	4.07
5/28	340	19	1616	12	0.750	6.25	0.62	3.78
N	7	7	7	7	7	7	7	7
$\bar{x}$	379.3	26.1	887.5	13	0.7	6.24	1.44	3.92
σ	30.0	15.2	386.5	21	0.13	0.40	0.56	0.119
C.V.%	7.9	58.2	43.5	161.5	18.5	6.4	39	3.0

TABLE A-173. COD DATA FOR 6 DAY 1,3-DICHLOROBENZENE UNIT

Chemical Compound: Dichlorobenzene

Parameter: COD

θ_c = 6 days

Volume of Reactor = 3.129 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
4/3/81	355	--	524	40	0	6.25	1.95	4.55
4/10	400	66	496	50	0	5.80	2.15	4.11
4/24	400	28	1064	18	0.360	6.00	1.04	6.00
5/1	415	18	1132	2	0.500	6.4	1.08	6.07
5/8	390	18	816	5	0.500	6.0	1.32	5.74
5/15	370	11	768	0	0.500	6.25	1.38	6.25
5/22	340	20	1117	8	0.500	6.40	0.89	6.02
5/28	340	40	1452	12	0.500	6.25	0.67	5.49
N	7	7	7	7	7	7	7	7
$\bar{x}$	379	28.7	903.7	13.5	0.41	6.15	1.22	5.67
σ	30.0	18.87	461.7	17.2	0.187	0.23	0.47	0.73
C.V.%	7.9	65.7	51	1.27	45.6	3.74	38.5	12.8

TABLE A- 174. BOD_5 DATA FOR 2 DAY 1,1,1-TRICHLOROETHANE UNIT

Chemical Compound: Trichloroethane

θ_c = 2 days

Parameter: BOD_5

Volume of Reactor = 3.13 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
4/6/81	157	1.3	388	0	1.50	6.0	1.12	2.09
4/10	258	2.20	460	14	1.50	6.2	1.60	1.86
4/13	201	1.0	400	0	1.52	6.3	1.46	2.06
4/15	278	3.2	400	6	1.5	6.2	1.99	1.94
4/20	214	2.1	594	0	1.5	6.2	1.03	2.09
4/22	204	4.9	573	0	1.5	6.3	1.03	2.09
4/24	320	3.9	570	1.4	1.5	6.25	1.61	2.06
4/27	262	3.1	593	1.2	1.52	6.1	1.24	2.04
4/29	300	4.4	770	4.0	1.50	6.15	1.10	2.03
5/1	245	6.3	799	2.0	1.50	6.15	0.869	2.06
5/4	337	3.3	730	3	1.50	6.5	1.38	2.09
5/6	232	3.3	492	0	1.50	6.5	1.41	2.09
5/8	324	3.6	677	5	1.52	6.2	1.37	2.06
5/11	168	1.4	715	0	1.5	6.0	0.649	2.09
5/13	300	4.8	735	5	1.5	6.1	1.15	2.02
5/15	255	3.7	781	0	1.5	6.2	0.933	2.09
5/18	240	2.8	432	0	1.5	6.15	1.57	2.09
5/20	231	1.8	772	0	1.5	6.0	0.827	2.09
5/22	275	2.8	502	0	1.5	6.0	1.51	2.09
5/25	225	1.8	598	1	1.5	6.1	1.06	2.07
5/27	249	1.5	742	0	1.5	6.0	0.927	2.09
N	22	22	22	22	22	22	22	22
$\bar{x}$	244	2.92	596	1.94	1.50	6.17	1.21	2.06
σ	57.1	1.41	146	3.33	$(7.2)(10^{-3})$	0.144	0.334	0.056
C.V.%	23.4	48	24.4	172	0.468	2.34	27.6	2.75

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TABLE A-175. BOD_5 DATA FOR 4 DAY 1,1,1-TRICHLOROETHANE UNIT

Chemical Compound: Trichloroethane

Parameter: BOD_5

θ_c = 4 days

Volume of Reactor = 3.14 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
4/6 /81	157	1.9	418	0	0.71	6.5	1.12	4.42
4/8	222	10.0	540	0	0.75	6.5	1.23	4.19
4/10	258	2.7	790	20	0.70	6.6	0.990	3.34
4/13	201	1.0	850	0	0.75	6.3	0.683	4.19
4/15	278	3.0	1040	4	0.75	6.3	0.772	4.02
4/17	102	1.1	1301	0	0.75	6.0	0.216	4.24
4/20	214	1.4	1654	0	0.75	6.1	0.503	4.19
4/22	204	7.6	1448	1	0.75	6.0	0.388	4.15
4/24	320	4.8	2253	1	0.75	6.2	0.403	4.16
4/27	262	10.2	1345	2	0.77	6.2	0.553	4.01
4/29	300	3.5	1103	2	0.75	6.2	0.773	4.10
5/1	245	2.5	1311	0	0.75	6.2	0.531	4.08
5/4	337	1.3	2010	0	0.75	6.25	0.480	4.19
5/6	232	2.0	1521	0	0.75	6.2	0.433	4.19
5/8	324	2.5	1404	0	0.77	6.35	0.673	4.08
5/11	168	0.9	2170	0	0.75	6.1	0.217	4.19
5/13	300	2.3	2590	4	0.75	6.1	0.324	4.12
5/15	255	1.6	1934	10	0.71	6.2	0.375	3.96
5/18	240	2.2	1524	0	0.75	6.25	0.451	4.19
5/20	231	2.1	1207	0	0.75	6.10	0.536	4.19
5/22	275	3.1	1000	10	0.75	6.0	0.758	3.82
5/25	225	2.5	1723	3	0.75	6.1	0.366	4.11
5/27	249	1.3	1996	10	0.75	5.9	0.338	3.98
5/28	210	0.3	1884	0	0.75	6.2	0.317	4.11
N	24	24	24	24	24	24	24	24
$\bar{x}$	242	2.98	1458	2.82	0.750	6.21	0.559	4.09
σ	55.2	2.65	548	4.94	0.016	0.166	0.270	0.197
C.V.%	22.8	89.2	37.6	175	2.18	2.68	48.4	4.82

TABLE A- 176. BOD_5 DATA FOR 6 DAY 1,1,1-TRICHLOROETHANE UNIT

Chemical Compound: Trichloroethane

θ_c =6 days

Parameter: BOD 5

Volume of Reactor =3.04 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
4/6/81	157	1.2	768	6	0.43	6.4	0.619	6.14
4/8	222	5.2	990	0	0.5	6.5	0.690	6.08
4/10	258	2.7	1342	6	0.48	6.6	0.601	5.84
4/13	201	0.5	1280	0	0.50	6.5	0.483	6.08
4/15	278	1.9	1390	29	0.20	6.1	0.578	8.02
5/17	102	5.9	1064	54	0	6.2	0.282	6.71
4/24	320	1	990	6	0	6.3	0.965	5.53
4/27	262	0.9	2001	10	0.50	6.25	0.387	5.60
4/29	300	3.8	1085	5	0.50	6.20	0.542	5.64
5/1	245	1.5	1101	6	0.50	6.70	0.706	5.53
5/4	337	1.4	1247	0	0.5	6.2	0.795	6.08
5/6	232	1.1	1503	0	0.5	6.25	0.457	6.08
5/8	324	1.8	1021	0	0.5	6.25	0.939	6.08
5/11	168	0.5	2030	0	0.5	6.15	0.241	6.08
5/13	300	1.5	1371	7	0.5	6.2	0.644	5.60
5/15	255	1.5	1144	4	0.5	6.3	0.665	5.70
5/18	240	1.8	989	0	0.5	6.5	0.747	6.08
5/20	231	2.9	1312	0	0.5	6.1	0.502	6.08
5/22	275	1.8	1520	4	0.5	6.2	0.532	5.82
5/25	225	2.6	1286	0	0.5	6.0	0.497	6.08
5/27	249	2.1	1514	3	0.5	6.2	0.484	5.88
5/28	210	0.6	1352	0	0.5	6.0	0.441	6.08
N	22	22	22	22	22	22	22	22
$\bar{x}$	245	2.02	1286	6.36	0.435	6.28	0.582	6.04
σ	56.8	1.39	308	12.4	0.155	0.188	0.183	0.521
C.V.%	23.2	69.2	23.9	195	35.6	2.84	31.4	8.62

TABLE A- 177. TOC DATA FOR 2 DAY 1,1,1-TRICHLOROETHANE UNIT

Chemical Compound: Trichloroethane θ_c = 2 days

Parameter: TOC Volume of Reactor = 3.13 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
4/1/81	110	14	617	11	1.5	6.8	0.557	1.90
4/3	115	19.4	450	0	1.48	6.5	0.765	2.11
4/10	148	13	460	14	1.50	6.2	0.919	1.86
4/15	212	19.5	400	6	1.5	6.2	1.51	1.94
4/20	113	18.2	594	0	1.5	6.2	0.543	2.09
4/22	179	25.7	573	0	1.5	6.3	0.905	2.09
4/24	179	18	570	1	1.5	6.25	0.902	2.06
4/27	192	17.6	593	1	1.52	6.1	0.909	2.04
4/29	190	8.8	770	4	1.50	6.15	0.699	2.03
5/1	198	12.4	799	2	1.50	6.15	0.702	2.06
5/4	196	17	730	0	1.50	6.5	0.804	2.09
5/6	202	13.1	492	0	1.50	6.5	1.23	2.09
5/8	230	23.1	677	0	1.52	6.2	0.971	2.06
5/11	195	6.6	715	0	1.5	6	0.753	2.09
5/13	199	10.4	735	5	1.5	6.1	0.760	2.02
5/15	199	16.9	781	0	1.5	6.2	0.728	2.09
5/18	175	17.5	432	0	1.5	6.15	1.15	2.09
5/20	202	12.8	772	0	1.5	6.0	0.723	2.09
5/22	193	19.2	502	0	1.5	6.0	1.06	2.09
5/25	201	17.4	598	1	1.5	6.1	0.944	2.07
5/27	207	16.4	742	0	1.5	6.0	0.771	2.09
5/28	194	18.1	759	0	1.5	6.25	0.734	2.09
N	22	22	22	22	22	22	22	22
$\bar{x}$	183	16.1	639	2.07	1.50	6.22	0.865	2.05
σ	32.5	4.45	130	3.83	0.008	0.199	0.223	0.066
C.V.%	17.8	27.7	20.4	185	0.5	3.20	25.8	3.24

TABLE A-178. TOC DATA FOR 4 DAY 1,1,1-TRICHLOROETHANE UNIT

Chemical Compound: Trichloroethane θ_c = 4 days

Parameter: TOC Volume of Reactor = 3.14 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
4/8/81	156	27.0	540	0	0.75	6.5	0.862	4.19
4/13	116	14.0	850	0	0.75	6.3	0.394	4.19
4/15	212	13.0	1040	4	0.75	6.3	0.589	4.02
4/17	118	21.5	1301	0	0.75	6.0	0.250	4.24
4/20	113	14.9	1654	0	0.75	6.1	0.191	4.19
4/22	179	27.5	1448	1	0.75	6.0	0.340	4.15
4/24	179	15.8	2253	1	0.75	6.2	0.226	4.16
4/27	192	24.7	1345	2	0.77	6.2	0.406	4.01
4/29	190	11.7	1103	2	0.75	6.2	0.489	4.10
5/1	198	12.9	1311	0	0.77	6.2	0.429	4.08
5/4	196	11.4	2010	0	0.75	6.25	0.279	4.19
5/6	202	7.2	1521	0	0.75	6.2	0.377	4.19
5/8	230	16.2	1404	0	0.77	6.35	0.478	4.08
5/11	195	8.4	2170	0	0.75	6.1	0.252	4.19
5/13	199	11.7	2590	4	0.75	6.1	0.215	4.12
5/15	199	13.5	1934	10	0.71	6.2	0.292	3.96
5/18	175	16.4	1524	0	0.75	6.25	0.329	4.19
5/20	202	10.8	1207	0	0.75	6.10	0.469	4.19
5/22	193	16.6	1000	10	0.75	6.0	0.532	3.82
5/25	201	7.0	1723	3	0.75	6.1	0.327	4.11
5/27	207	14.2	1996	10	0.75	5.9	0.281	3.98
5/28	194	17.9	1884	0	0.75	6.2	0.292	4.11
N	22	22	22	22	22	22	22	22
$\bar{x}$	184	15.2	1536	2.16	0.751	6.17	0.377	4.11
σ	31.2	5.71	500	3.45	0.012	0.13	0.15	0.101
C.V.%	17	37.5	32.6	160	1.53	2.17	40.6	2.47

TABLE A- 179. TOC DATA FOR 6 DAY 1,1,1-TRICHLOROETHANE UNIT

Chemical Compound: Trichloroethane θ_c = 6 days

Parameter: TOC   Volume of Reactor = 3.04 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
4/1/81	110	4	779	12	0.25	6.5	0.434	4.87
4/3	115	17.6	810	4	0.48	6.2	0.418	5.83
4/10	148	10.5	1342	6	0.48	6.6	0.345	5.84
4/13	116	8	1280	0	0.50	6.5	0.279	6.08
4/17	118	23.5	1064	5.4	0.41	6.2	0.326	6.71
4/22	179	20.6	945	5.0	0.5	6.2	0.557	5.58
4/24	179	16	990	6.0	0	6.3	0.540	5.53
4/27	192	15.8	2001	10.0	0.5	6.25	0.284	5.60
4/29	190	13.1	1085	5.0	0.5	6.20	0.515	5.64
5/1	198	12.1	1101	6.0	0.5	6.70	0.571	5.53
5/4	196	13.6	1247	0	0.5	6.2	0.462	6.08
5/6	202	12.2	1503	0	0.5	6.25	0.398	6.08
5/8	230	17.0	1021	0	0.5	6.25	0.666	6.08
5/11	195	9.9	2030	0	0.5	6.15	0.280	6.08
5/13	199	9.9	1371	7	0.5	6.2	0.427	5.60
5/15	199	14.2	1144	4	0.5	6.3	0.519	5.70
5/18	175	14.2	989	0	0.5	6.5	0.544	6.08
5/20	202	15.1	1312	0	0.5	6.1	0.445	6.08
5/22	193	8.8	1520	4	0.5	6.2	0.373	5.82
5/25	201	16.7	1286	0	0.5	6.0	0.444	6.08
5/27	207	18.4	1514	3	0.5	6.2	0.402	5.88
5/28	194	16.1	1352	0	0.5	6.0	0.408	6.08
N	22	22	22	22	22	22	22	22
$\bar{x}$	179	14.0	1259	3.52	0.46	6.27	0.438	5.87
σ	34.4	4.43	324	3.56	0.116	0.18	0.102	0.36
C.V%	19.2	31.7	25.8	101	2.88	24	23.5	6.04

TABLE A- 180. COD DATA FOR 2 DAY 1,1,1-TRICHLOROETHANE UNIT

Chemical Compound : Trichloroethane θ_c = 2 days
Parameter: COD Volume of Reactor = 3.13 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
4/10/81	640	52	460	14	1.50	6.2	3.97	1.86
4/17	460	55	390	0	1.50	6.3	3.42	2.09
4/24	435	39	570	1.4	1.50	6.25	2.19	2.06
5/1	510	31	799	2.0	1.50	6.15	1.81	2.06
5/8	590	40	677	5	1.52	6.20	2.49	2.06
5/15	570	34	781	0	1.5	6.20	2.08	2.09
5/22	530	41	502	0	1.5	6.0	2.92	2.09
5/28	520	32	759	0	1.5	6.25	1.97	2.09
N	8	8	8	8	8	8	8	8
$\bar{x}$	531	40.5	617	2.80	1.50	6.19	2.58	2.05
σ	67.3	8.86	158	4.80	0.007	0.090	0.775	0.078
C.V.%	12.6	21.9	25.6	172	0.470	1.46	30.0	3.81

TABLE A-181. COD DATA FOR 4 DAY 1,1,1-TRICHLOROETHANE UNIT

Chemical Compound: Trichloroethane θ_c = 4 days
Parameter: COD Volume of Reactor= 3.14 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
4/17/81	460	48	1301	0	0.75	6.0	0.974	4.24
4/24	435	39	2253	1	0.75	6.2	0.548	4.16
5/1	510	33	1311	0	0.75	6.2	1.10	4.08
5/8	590	41	1404	0	0.77	6.35	1.22	4.08
5/15	570	36	1934	10	0.71	6.20	0.837	3.96
5/22	530	38	1000	10	0.75	6.00	1.460	3.82
5/28	520	28	1884	0	0.75	6.20	0.784	4.11
N	7	7	7	7	7	7	7	7
$\bar{x}$	516	37.6	1584	3.06	0.747	6.16	0.989	4.06
σ	55.3	6.29	445	4.77	0.018	0.125	0.302	0.13
C.V.%	10.7	16.7	28.1	156	2.40	2.03	30.5	3.38

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TABLE A-182. COD DATA FOR 6 DAY 1,1,1-TRICHLOROETHANE UNIT

Chemical Compound: Trichloroethane θ_c = 6 days
Parameter: COD Volume of Reactor = 3.04 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
4/10/81	640	42	1342	6	0.48	6.6	1.49	5.84
4/24	435	36	990	6.0	0	6.3	1.31	5.53
5/1	510	31	1110	6.0	0.5	6.70	1.47	5.53
5/8	590	42	1021	0.0	0.5	6.25	1.71	6.08
5/15	570	29	1144	4.0	0.5	6.30	1.49	5.70
5/22	530	38	1520	4.0	0.5	6.20	1.03	5.82
5/28	520	36	1352	0.0	0.5	6.0	1.09	6.08
N	8	8	8	8	8	8	8	8
$\bar{x}$	532	36.1	1191	10	0.37	3.04	1.36	5.91
σ	67.3	4.64	190	17.9	0.228	0.226	0.226	0.386
C.V.%	12.7	12.9	15.9	179	61.8	3.58	16.7	6.53

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TABLE A-183. BOD$_5$ FOR 2 DAY 1,3-DICHLOROBENZENE, 1,1,1-TRICHLOROETHANE AND 2,4-DINITROPHENOL COMBINED UNIT

Chemical Compound: Combined:Dichlorobenzene, Trichloroethane Dinitrophenol θ_c = 2 days
Parameter: BOD$_5$ Volume of Reactor = 3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
4/1/81	202	3.05	500	21	1.174	6.2	1.18	2.03
4/3	268	5.39	580	1.47	1.482	6.2	1.35	2.03
4/6	261	5.2	714	5	1.448	6.2	1.07	2.03
4/8	240	5.4	780	4.5	1.456	6.2	0.90	2.03
4/10	209	2.7	1100	5	1.466	6.2	0.56	2.03
4/13	233	3.8	858	18.8	1.333	6.2	0.79	2.03
4/15	230	6.0	847	19	1.329	6.2	0.79	2.03
4/17	218	2.2	1144	30	1.30	6.2	0.56	2.03
4/20	258	5.25	910	1	1.516	6.2	0.83	2.0
4/22	281	6.4	1190	3	1.506	6.2	0.69	2.0
4/24	216	3.9	1144	3.1	1.504	6.2	0.55	2.0
4/27	225	5.2	896	13	1.416	6.2	0.73	2.0
4/29	220	1.3	900	10	1.440	6.2	0.72	2.11
5/1	288	3.7	1430	8	1.483	6.2	0.59	2.0
5/4	250	6.2	863	3	1.5	6.2	0.85	1.99
5/6	202	4.7	1000	1	1.51	6.2	0.59	2.0
5/8	243	4.6	1050	5	1.489	6.2	0.67	2.0
5/11	193	7.3	800	2	1.5	6.2	0.70	2.0
5/13	218	3.6	1140	2	1.511	6.2	0.56	2.0
5/15	230	2.4	884	5	1.48	6.2	0.76	2.0
5/18	218	7.4	1336	12	1.458	6.2	0.48	2.0
5/20	218	6.8	860	12	1.420	6.2	0.74	2.00
5/22	217	5.2	1053	1	1.518	6.2	0.60	2.00
5/25	209	5.3	860	4	1.490	6.2	0.71	2.00
5/27	200	5.0	869	14	1.403	6.2	0.67	2.00
5/28	155	4.0	856	6	1.472	6.2	0.53	2.00
N	26	26	26	26	26	26	26	26
$\bar{x}$	227	4.69	945	8.07	1.446	6.2	0.73	2.0
σ	28.98	1.57	211	7.46	0.0813	0	0.20	0.024
C.V.%	12.77	33.5	22.29	92.44	5.62	0	28	1.22

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TABLE A-184. BOD_5 FOR 4 DAY 1,3-DICHLOROBENZENE, 1,1,1-TRICHLOROETHANE AND 2,4-DINITROPHENOL COMBINED UNIT

Chemical Compound: Combined: Dichlorobenzene, Trichloroethane Dinitropehnol θ_c = 4 days

Parameter: BOD_5 Volume of Reactor = 3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
4/1/81	202	1.9	530	2.36	0.793	6.2	1.12	3.68
4/3	268	4.51	770	9.4	0.642	6.2	1.02	4.10
4/6	261	6.0	870	9.7	0.656	6.2	0.88	4.08
4/8	240	4.4	796	6.7	0.680	6.2	0.88	4.07
4/10	209	2.5	928	44	0.343	6.2	0.66	4.07
4/13	233	5.4	1228	10	0.695	6.2	0.56	4.0
4/15	230	5.9	1348	14	0.664	6.2	0.50	4.07
4/17	218	2.7	1407	9.34	0.695	6.2	0.45	4.07
4/20	258	6.2	1461	1	0.757	6.2	0.52	3.99
4/22	281	6.7	1776	6	0.735	6.2	0.46	3.99
4/24	216	3.7	1390	5.1	0.732	6.2	0.455	4.00
4/27	225	6.2	2270	3.6	0.750	6.2	0.29	3.99
4/29	220	4.8	750	11	0.640	6.2	0.85	4.0
5/1	288	4.5	1690	1	0.771	6.2	0.50	3.93
5/4	250	5.9	1574	7	0.73	6.2	0.46	3.98
5/6	202	5.1	1175	1	0.756	6.2	0.50	3.99
5/8	243	4.5	1110	6.4	0.715	6.2	0.64	4.00
5/11	193	6.7	1500	1	0.756	6.2	0.38	4.01
5/13	218	4.8	1870	2	0.753	6.2	0.34	4.00
5/15	230	3.9	1997	1	0.758	6.2	0.34	4.00
5/18	218	10.6	1744	16	0.687	6.2	0.37	4.00
5/20	218	4.3	1677	11	0.708	6.2	0.38	4.00
5/22	217	7.1	1611	1	0.757	6.2	0.39	4.00
5/25	209	8.2	1410	8	0.713	6.2	0.43	4.02
5/27	200	6.8	1445	11	0.700	6.2	0.41	4.00
5/28	155	1.4	1032	6	0.714	6.2	0.44	4.00
N	26	26	26	26	26	26	26	26
$\bar{x}$	227	5.18	1360	7.867	0.704	6.2	0.55	4.0
σ	28.98	1.98	427	8.57	0.0841	0	0.22	0.076
C.V.%	12.77	38.32	31.4	109	12	0	40.4	1.9

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TABLE A-185. BOD_5 FOR 6 DAY 1,3-DICHLOROBENZENE, 1,1,1-TRICHLOROETHANE AND 2,4-DINITROPHENOL COMBINED UNIT

Chemical Compound: Dichlorobenzene, Trichloroethane Dinitrophenol
Parameter: BOD_5
θ_c = 6 days
Volume of Reactor = 2.97 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
4/1/81	202	2.2	590	2.32	0.476	6.2	1.03	5.83
4/3	268	7.01	750	12.7	0.355	6.2	1.07	5.94
4/6	261	4.9	780	11.2	0.375	6.2	1.01	5.97
4/8	240	6.1	765	6.2	0.430	6.2	0.94	5.95
4/10	209	2.8	1045	26.6	0.274	6.2	0.60	6.01
4/13	233	4.3	1045	13.8	0.387	6.2	0.67	5.94
4/15	230	7.2	1660	15	0.423	6.2	0.42	5.94
4/17	218	2.7	1425	16.7	0.400	6.2	0.39	5.94
4/20	25	5.8	1330	11	0.425	6.2	0.58	5.99
4/22	281	7.4	1696	7.2	0.458	6.2	0.498	6.01
4/24	216	5.2	2465	1	0.491	6.2	0.26	6.00
4/27	225	7.5	1740	6	0.465	6.2	0.39	6.00
4/29	220	5.7	1070	10	0.415	6.2	0.62	6.00
5/1	288	5.3	1700	3	0.480	6.2	0.50	6.00
5/4	250	9.1	1682	5	0.470	6.2	0.45	5.99
5/6	202	5.6	1260	1	0.488	6.2	0.48	6.00
5/8	243	5.1	1470	7	0.456	6.2	0.50	5.98
5/11	193	11	1410	1	0.488	6.2	0.41	6.01
5/13	218	4.1	1900	1	0.49	6.2	0.34	6.01
5/15	230	3.3	1834	4	0.476	6.2	0.38	6.01
5/18	218	11.4	2456	20	0.425	6.2	0.27	6.01
5/20	218	3.9	2160	3	0.483	6.2	0.30	6.00
5/22	217	2.9	1665	1	0.489	6.2	0.39	6.01
5/25	209	10.8	1930	7	0.463	6.2	0.33	6.02
5/27	200	6.04	1764	8	0.465	6.2	0.34	5.90
5/28	155	2.0	1697	12	0.435	6.2	0.27	6.00
N	26	26	26	26	26	26	26	26
$\bar{x}$	227	5.70	1511	8.18	0.422	6.2	0.52	5.98
σ	28.98	2.65	498	6.5	0.051	0	0.24	0.043
C.V.%	12.77	46.6	33	80	11.65	0	46.5	0.73

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TABLE A-186. TOC FOR 2 DAY 1,3-DICHLOROBENZENE, 1,1,1-TRICHLOROETHANE AND 2,4-DINITROPHENOL COMBINED UNIT

Chemical Compound: Combined, Dichlorobenzene
Trichloroethane
Dinitrophenol
θ_c = 2 days
Parameter: TOC
Volume of Reactor= 3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
4/1/81	142	10	500	21	1.174	6.2	0.83	2.03
4/3	92	17.1	580	1.47	1.482	6.2	0.46	2.03
4/6	138.5	35	714	5	1.448	6.2	0.57	2.03
4/8	157	9	780	4.5	1.456	6.2	0.59	2.03
4/10	134	4	1100	5	1.466	6.2	0.36	2.03
4/13	127	7	858	18.8	1.333	6.2	0.43	2.03
4/15	178.5	0.2	847	19	1.329	6.2	0.62	2.03
4/17	85.5	16.5	1144	30	1.30	6.2	0.22	2.03
4/20	126	12.4	910	1	1.516	6.2	0.40	2.00
4/22	156	14.0	1190	3	1.506	6.2	0.38	2.0
4/24	143	13.4	1144	3.1	1.504	6.2	0.37	2.00
4/27	159	9.5	896	13	1.416	6.2	0.52	2.0
4/29	145	7.5	900	10	1.440	6.2	0.47	2.0
5/1	157	11.3	1430	8	1.483	6.2	0.32	2.0
5/4	178	7.6	863	3	1.5	6.2	0.60	1.99
5/6	118	10.9	1000	1	1.51	6.2	0.35	2.00
5/8	126	11.9	1050	5	1.489	6.2	0.35	2.00
5/11	138	10.2	800	2	1.50	6.2	0.50	2.01
5/13	155	4.6	1140	2	1.511	6.2	0.40	2.00
5/15	135	10.1	884	5	1.48	6.2	0.45	2.00
5/18	152	14.0	1336	12	1.458	6.2	0.33	2.00
5/20	157	10.3	860	12	1.420	6.2	0.53	2.00
5/22	149	8.2	1053	1	1.518	6.2	0.41	2.00
5/25	174	11.2	860	4	1.490	6.2	0.59	2.00
5/27	149	12.3	869	14	1.403	6.2	0.50	2.00
5/28	156	16.9	856	6	1.472	6.2	0.53	2.00
N	26	26	26	26	26	26	26	26
$\bar{x}$	143	11.128	945	8.07	1.446	6.2	0.46	2.00
σ	22.34	6.241	211	7.46	0.0813	0	0.13	0.001
C.V.%	15.62	56.085	22.30	92.44	5.62	0	27.4	0.72

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TABLE A-187. TOC FOR 4 DAY 1,3-DICHLOROBENZENE, 1,1,1-TRICHLOROETHANE AND 2,4-DINITROPHENOL COMBINED UNIT

Chemical Compound: Combined: Dichlorobenzene, Trichloroethane, Dinitrophenol

θ_c = 4 days

Parameter: TOC

Volume of Reactor = 3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
4/1/81	142	14	530	2.36	0.713	6.2	0.78	4.07
4/3	92	11.9	770	9.40	0.648	6.2	0.3	4.07
4/6	138.5	20.5	870	9.7	0.656	6.2	0.47	4.08
4/8	157	15	796	6.7	0.680	6.2	0.58	4.07
4/10	134	6.5	928	44	0.343	6.2	0.42	4.07
4/13	127	10	1225	10	0.695	6.2	0.30	4.0
4/15	178.5	2.3	1348	14	0.664	6.2	0.39	4.07
4/17	85.5	14	1407	9.34	0.695	6.2	0.18	4.07
4/20	126	13.3	1461	1	0.757	6.2	0.25	3.99
4/22	156	11.5	1776	6	0.735	6.2	0.257	3.99
4/24	143	9.9	1390	5.1	0.732	6.2	0.30	4.0
4/27	159	9.3	2270	3.6	0.750	6.2	0.20	3.99
4/29	145	6.6	750	11	0.640	6.2	0.56	4.00
5/1	157	10.2	1690	1	0.771	6.2	0.27	3.93
5/4	178	9.4	1574	7	0.73	6.2	0.33	3.97
5/6	118	10.5	1175	1	0.756	6.2	0.29	3.99
5/8	126	10.6	1110	6.4	0.715	6.2	0.33	4.00
5/11	138	6.9	1500	1	0.756	6.2	0.27	4.01
5/13	155	6.9	1870	2	0.753	6.2	0.24	4.00
5/15	135	10.5	1997	1	0.758	6.2	0.20	4.00
5/18	152	9.6	1744	16	0.687	6.2	0.26	4.00
5/20	157	7.2	1677	11	0.708	6.2	0.27	4.00
5/22	149	9.4	1611	1	0.757	6.2	0.27	4.00
5/25	174	10.6	1410	8	0.713	6.2	0.36	4.02
5/27	149	8.4	1445	8	0.700	6.2	0.30	4.00
5/28	156	12.4	1032	6	0.714	6.2	0.44	4.00
N	26	26	26	26	26	26	26	26
$\bar{x}$	143	10.28	1360	7.867	0.704	6.2	0.34	4.00
σ	22.34	3.48	427	8.57	0.0841	0	0.135	0.038
C.V.%	15.62	33.86	31.4	109	12	0	39.87	0.95

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TABLE A-188. TOC FOR 6 DAY 1,3-DICHLOROBENZENE, 1,1,1-TRICHLOROETHANE AND 2,4-DINITROPHENOL COMBINED UNIT

Chemical Compound: Combined, Dichlorobenzene, Trichloroethane, Dinitrophenol θ_c = 6 days

Parameter: TOC Volume of Reactor = 2.97 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
4/1/81	142	14	590	2.32	0.476	6.2	0.72	5.83
4/3	92	15.0	750	12.7	0.355	6.2	0.37	5.94
4/6	138.5	5	780	11.2	0.375	6.2	0.53	5.97
4/8	157	13	766	6.2	0.430	6.2	0.62	5.95
4/10	134	10	1045	26.6	0.274	6.2	0.39	6.01
4/13	127	14	1045	13.8	0.387	6.2	0.37	5.94
4/15	178.5	0.5	1660	15	0.423	6.2	0.32	5.94
4/17	85.5	12.4	1425	16.7	0.400	6.2	0.18	5.94
4/20	126	6.3	1330	11	0.425	6.2	0.28	5.99
4/22	156	4.9	1696	7.2	0.458	6.2	0.276	6.01
4/24	143	6.4	2465	1	0.491	6.2	0.174	6.00
4/27	159	9.7	1740	6	0.465	6.2	0.274	6.00
4/29	145	7.3	1070	10	0.415	6.2	0.41	6.00
5/1	157	7.4	1700	3	0.480	6.2	0.28	6.00
5/4	178	8.0	1682	5	0.470	6.2	0.32	5.99
5/6	118	8.7	1260	1	0.488	6.2	0.28	6.00
5/8	126	10.3	1470	7	0.456	6.2	0.26	5.98
5/11	138	10.5	1410	1	0.488	6.2	0.29	6.01
5/13	155	7.3	1900	1	0.49	6.2	0.25	6.01
5/15	135	10.7	1834	4	0.476	6.2	0.22	6.01
5/18	152	8.8	2456	20	0.425	6.2	0.19	6.01
5/20	157	6.7	2160	3	0.483	6.2	0.22	6.00
5/22	149	6.5	1665	1	0.489	6.2	0.27	6.01
5/25	174	8.1	1930	7	0.463	6.2	0.27	6.02
5/27	149	7.6	1764	8	0.465	6.2	0.25	5.90
5/28	156	12.5	1697	12	0.435	6.2	0.28	6.00
N	26	26	26	26	26	26	26	26
$\bar{x}$	143	8.52	1511	8.18	0.442	6.2	0.32	5.97
σ	22.34	3.67	498	6.5	0.051	0	0.13	0.043
C.V.%	15.62	43.1	33	80	11.65	0	40.48	0.72

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TABLE A-189. COD FOR 2 DAY 1,3-DICHLOROBENZENE, 1,1,1-TRICHLOROETHANE AND 2,4-DINITROPHENOL COMBINED UNIT

Chemical Compound: Combined, Dichlorobenzene Trichloroethane Dinitrophenol

θ_c = 2 days

Parameter: COD

Volume of Reactor =3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
4/10/81	410	46	1100	5	1.466	6.2	1.09	2.03
4/17	400	35	1144	30	1.300	6.2	1.02	2.03
4/24	390	39	1144	3	1.504	6.2	0.99	2.00
5/1	450	31	1430	8	1.483	6.2	0.92	2.00
5/8	490	32	1050	5	1.489	6.2	1.36	2.0
5/15	410	28	884	5	1.48	6.2	1.36	2.00
5/22	425	32	1053	1	1.518	6.2	1.18	2.00
5/28	460	35	856	6	1.472	6.2	1.57	2.00
N	8	8	8	8	8	8	8	8
$\bar{x}$	429	34.75	1083	7.887	1.464	6.2	1.18	2.0
σ	34.27	5.599	177.78	9.16	0.0684	0	0.224	0.001
C.V.%	7.988	16.11	16.41	116.2	4.67	0	19.05	0.69

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TABLE A-190. COD FOR 4 DAY 1,3-DICHLOROBENZENE, 1,1,1-TRICHLOROETHANE AND 2,4-DINITROPHENOL COMBINED UNIT

Chemical Compound: Combined, Dichlorobenzene
Trichloroethane
Dinitrophenol

θ_c = 4 days

Parameter: COD

Volume of Reactor = 3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
4/10/81	410	68	928	44	0.343	6.2	1.29	4.07
4/17	400	31	1407	9.34	0.695	6.2	0.832	4.06
4/24	390	39	1390	5.1	0.732	6.2	0.82	4.0
5/1	450	35	1690	1	0.771	6.2	0.78	3.93
5/8	490	31	1110	6.4	0.715	6.2	1.30	4.0
5/15	410	26	1997	1	0.758	6.2	0.60	4.00
5/22	425	31	1611	1	0.757	6.2	0.77	4.00
5/28	460	25	1032	6	0.714	6.2	1.30	4.00
N	8	8	8	8	8	8	8	8
$\bar{x}$	429	35.75	1396	9.23	0.685	6.2	0.9615	4
σ	34.27	13.78	364	14.38	0.14	0	0.286	0.043
C.V.%	7.988	38.55	26.0	155.8	20.43	0	29.78	1.07

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TABLE A-191. COD FOR 6 DAY 1,3-DICHLOROBENZENE, 1,1,1-TRICHLOROETHANE AND 2,4-DINITROPHENOL COMBINED UNIT

Chemical Compound: Combined, Dichlorobenzene
Trichloroethane
Dinitrophenol

Parameter: COD

θ_c = 6 days

Volume of Reactor = 2.97liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
4/10/81	410	54	1045	26.6	0.274	6.2	1.18	6.01
4/17	400	32	1425	16.7	0.400	6.2	0.84	5.94
4/24	390	36	2465	1	0.491	6.2	0.47	6.00
5/1	450	26	1700	3	0.480	6.2	0.79	6.00
5/8	490	28	1470	7	0.456	6.2	1.00	5.98
5/15	410	25	1834	4	0.476	6.2	0.67	6.01
5/22	425	29	1665	1	0.489	6.2	0.77	6.01
5/28	460	27	1697	12	0.435	6.2	0.81	6.00
N	8	8	8	8	8	8	8	8
$\bar{x}$	429	32.12	1662.5	8.91	0.437	6.2	0.81	5.99
σ	34.27	9.52	405.5	9.0	0.073	0	0.21	0.024
C.V.%	7.988	29.65	24.39	101	16.70	0	26	0.4

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TABLE A-192. BOD5 FOR 2 DAY PENTACHLOROPHENOL UNIT

Chemical Compound: Pentachlorophenol
Parameter: BOD5

θ_c = 2 days
Volume of Reactor = 3.129 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
7/1/81	278	17.5	212	20	0.79	6.0	3.625	2.04
7/3	260	6.20	412	128	0	5.8	1.684	1.21
7/6	280	5.7	612	0	1.500	6.25	1.316	2.09
7/8	300	2.5	824	4	1.500	6.3	1.055	2.03
7/10	263	3.17	728	20	1.500	6.25	1.039	1.84
7/13	258	3.38	560	24	1.140	6.20	1.315	2.0
7/15	246	7.54	376	32	0.920	6.20	1.867	1.95
7/17	220	2.76	472	20	1.120	6.20	1.330	2.09
7/20	230	4.43	392	52	0.520	6.40	1.728	1.87
7/22	253	3.54	412	64	0.500	6.3	1.780	2.02
7/27	214	4.7	412	26	1.000	5.8	1.386	1.95
7/29	219	3.41	416	52	0.55	6.4	1.551	1.92
8/3	235	7.26	360	28	1.090	6.25	1.878	1.83
8/5	188	9.8	300	8	1.38	6.25	1.802	1.93
8/7	265	11.1	196	16	0.95	6.40	3.982	1.93
8/10	323	7.05	184	8	1.270	6.25	5.049	1.99
8/12	299	9.02	188	22	0.690	6.25	4.575	1.99
8/14	255	5.10	496	74	0.470	6.0	1.420	2.00
8/17	339.7	9.96	304	52	0	6.4	3.164	1.85
8/19	315	10.35	360	48	0.340	6.3	2.44	2.0
8/21	307.5	3.1	456	32	0.750	6.6	1.969	2.01
8/24	333	11.0	340	22	1.050	6.25	2.71	2.0
8/26	250	3.8	668	2	1.500	6.2	1.026	2.04
8/28	279	1.5	580	0	1.500	6.25	1.330	2.08
N	24	24	24	24	24	24	24	24
$\bar{x}$	267.09	6.85	427.5	31.42	917.92	6.229	2.11	1.946
σ	39.81	4.33	169.1	28.99	464.44	0.1805	1.148	0.174
C.V.%	0.149	63.21	39.55	92.27	50.59	2.897	0.54	8.94

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TABLE A-193. BOD_5 FOR 4 DAY PENTACHLOROPHENOL UNIT

Chemical Compound: Pentachlorophenol θ_c = 4 days
Parameter: BOD_5 Volume of Reactor = 3.069 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c
7/1/81	275	6.6	692	62	0	6.25	1.165	3.80
7/3	260	3.5	1356	44	0.550	5.8	0.521	4.03
7/6	280	3.4	1184	5	0.740	6.30	0.700	3.95
7/8	300	2.10	1416	4	0.750	6.3	0.626	3.98
7/10	263	2.20	1416	10	0.750	6.25	0.545	3.80
7/13	258	0.87	1244	2	0.750	6.30	0.613	3.91
7/15	246	0.92	1164	0	0.750	6.25	0.620	4.09
7/17	220	1.00	1100	1	0.750	6.30	0.591	4.02
7/20	230	1.02	1012	0	0.750	6.40	0.682	4.09
7/22	253	1.20	1200	8	0.72	6.30	0.623	4.00
7/24	277	1.36	1028	0	0.75	6.40	0.809	4.09
7/27	214	1.38	1092	5	0.75	5.90	0.543	3.93
7/31	163	1.84	768	116	0	5.80	0.578	3.68
8/3	235	4.91	644	12	0.64	6.25	1.072	3.85
8/5	188	2.33	872	4	0.73	6.25	0.632	3.99
8/7	265	3.71	880	0	0.75	6.4	0.904	4.09
8/10	323	3.90	752	0	0.750	6.25	1.260	4.04
8/12	299	1.60	552	0	0.750	6.25	1.588	4.02
8/14	255	0.90	1540	7	0.750	6.1	0.474	3.89
8/17	339	1.9	1160	8	0.750	6.3	0.865	3.83
8/19	315	1.9	1256	6	0.750	6.0	0.764	3.85
8/21	307	1.45	1008	1	0.750	6.1	0.873	3.97
8/24	333	3.1	1010	0	0.766	6.25	0.967	4.0
8/26	250	9.6	1120	2	0.750	6.3	0.650	4.02
8/28	279	0.6	920	1	0.750	6.25	0.889	4.04
N	25	25	25	25	25	25	25	25
$\bar{x}$	265.13	2.55	1055.4	11.92	0.6758	6.21	0.782	3.96
σ	43.26	2.05	253.95	26.01	0.208	0.168	0.266	0.108
C.V.%	16.3	80.39	24.06	218.20	30.78	2.71	33.9	2.73

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BOTTOM OF IMAGE AREA; OUTSIDE DIMENSION FOR TABLES AND ILLUSTRATIONS
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EPA-287 (Cin.)
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TABLE A- 194. BOD_5 FOR 6 DAY PENTACHLOROPHENOL UNIT

Chemical Compound: Pentachlorophenol

Parameter: BOD5

θ_c = 6 days

Volume of Reactor = 3.255 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
7/1/81	278	3.20	1000	89	0	5.80	0.713	4.38
7/3	260	2.70	1140	2	0.500	5.80	0.585	6.12
7/6	280	2.2	1113	22	0.390	6.25	0.696	5.81
7/8	300	4.30	1264	3	0.550	6.40	0.672	5.68
7/10	263	3.33	1408	8	0.500	6.25	0.516	5.97
7/13	258	1.93	1240	24	0.300	6.30	0.580	6.04
7/15	246	2.65	1064	22	0.350	6.40	0.655	6.10
7/17	220	1.70	1196	1	0.550	6.60	0.537	5.71
7/20	230	4.67	1052	5	0.500	6.25	0.605	6.04
7/22	253	1.47	1124	60	0.135	6.20	0.617	6.00
7/24	277	2.83	1384	74	0.25	6.40	0.567	6.30
7/27	214	1.65	2200	6	0.50	5.80	0.250	5.71
7/29	219	0.99	1276	0	0.525	6.40	0.486	6.20
7/30	163	1.62	1248	1	0.55	5.80	0.355	5.63
8/3	235	5.12	1232	0	0.525	6.25	0.527	6.20
8/5	188	1.04	1216	0	0.525	6.25	0.427	6.20
8/7	265	1.32	1260	0	0.525	6.25	0.582	6.20
8/10	323	3.40	1096	0	0.500	6.25	0.815	6.40
8/12	299	3.28	1180	0	0.500	6.25	0.701	6.42
8/14	255	1.38	1608	10	0.500	5.9	0.414	5.97
8/17	339.7	4.08	1592	4	0.500	6.3	0.595	6.25
8/19	315	2.4	1588	26	0.400	5.9	0.518	6.12
8/21	307.5	2.4	1452	0	0.550	6.0	0.562	5.9
8/24	333	2.6	1500	0	0.540	6.25	0.614	6.0
8/26	250	1.75	1248	1	0.550	6.2	0.55	5.85
8/28	279	0.67	1020	0	0.550	6.25	0.756	5.92
N	26	26	26	26	26	26	26	26
$\bar{x}$	263.47	2.488	1296.1	13.77	458.27	6.18	0.572	5.97
σ	43.37	1.178	254.8	24.12	138.8	0.22	0.125	0.388
C.V.%	16.46	47.35	19.66	175.16	30.29	3.56	21.8	6.49

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EPA-287 (Cin.)
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TABLE A-195. TOC FOR 2 DAY PENTACHLOROPHENOL UNIT

Chemical Compound: Pentachlorophenol θ_c = 2 days

Parameter: TOC Volume of Reactor = 3.129 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
7/1/81	206	29.0	212	20	0.79	6.0	2.683	2.01
7/3	172	15.9	412	128	0	5.8	1.114	1.21
7/6	145	15.0	612	0	1.500	6.75	0.681	2.09
7/8	171	13.2	824	4	1.500	6.30	0.602	2.03
7/10	165	10.8	728	20	1.500	6.25	0.652	1.84
7/13	167	7.1	560	24	1.140	6.20	1.036	2.0
7/15	145	21.0	376	32	0.920	6.20	1.100	1.95
7/17	154	15.9	472	20	1.120	6.20	0.931	2.09
7/20	138	12.9	392	52	0.52	6.4	1.037	1.87
7/22	151	8.5	412	64	0.50	6.3	1.403	2.02
7/27	160	15.1	412	26	1.00	5.8	1.037	1.97
7/29	160	12.4	416	52	0.55	6.4	1.133	1.92
7/31	128	14.5	544	18	1.3	6.0	0.650	1.97
8/3	143	14.0	360	28	1.090	6.25	1.143	1.83
8/5	120	17.2	300	8	1.38	6.25	1.151	1.98
8/7	143	18.7	196	16	0.95	6.4	2.149	1.93
8/10	165	13.5	184	8	1.270	6.25	2.579	1.91
8/12	146	16.0	188	22	0.690	6.25	2.234	1.91
8/14	157	19.6	496	74	0.470	6.0	0.874	2.0
8/17	144	16.7	304	52	0	6.4	1.395	1.85
8/19	153	18.1	260	48	0.340	6.3	1.232	2.0
8/21	136	3.1	456	32	0.750	6.6	0.906	2.01
8/24	135	15.2	340	22	1.050	6.25	1.142	2.0
8/26	122	13.9	668	2	1.500	6.2	1.024	2.04
8/28	179	11.5	580	0	1.500	6.25	0.887	2.08
N	25	25	25	25	25	25	25	25
$\bar{x}$	152.6	14.7	432.2	30.88	933.2	6.22	1.231	1.945
σ	19.3	4.92	167.1	28.51	461.0	0.182	0.572	0.169
C.V.%	120.8	33.47	38.66	12.33	49.4	2.93	46.5	8.69

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TABLE A- 196. TOC FOR 4 DAY PENTACHLOROPHENOL UNIT

Chemical Compound: Pentachlorophenol θ_c = 4 days

Parameter: TOC Volume of Reactor = 3.069 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
7/1/81	206	11.5	692	62	0	6.25	0.873	3.80
7/3	172	12.5	1352	44	0.550	5.80	0.346	4.03
7/6	145	11.3	1184	5	0.740	6.30	0.362	3.95
7/8	171	12.0	1416	4	0.750	6.30	0.357	3.98
7/10	165	9.0	1416	10	0.750	6.25	0.342	3.80
7/13	167	4.5	1244	2	0.750	6.30	0.397	3.91
7/15	145	5.0	1164	0	0.750	6.25	0.365	4.09
7/17	154	4.5	1100	1	0.750	6.30	0.414	4.02
7/20	138	5.3	1012	0	0.75	6.4	0.409	4.09
7/22	151	6.0	1200	8	0.72	6.3	0.372	4.00
7/24	170	8.3	1028	0	0.75	6.4	0.497	4.09
7/27	160	13.0	1092	5	0.75	5.9	0.406	3.93
7/31	128	7.6	768	116	0	5.8	0.454	3.68
8/3	143	4.7	644	12	0.64	6.25	0.651	3.85
8/5	120	12.7	872	4	0.73	6.25	0.404	3.99
8/7	143	9.8	880	0	0.75	6.4	0.488	4.09
8/10	165	5.3	752	0	0.75	6.25	0.643	4.04
8/12	146	8.5	532	0	0.75	6.25	0.805	4.02
8/14	157	12.2	1540	7	0.75	6.1	0.292	3.89
8/17	144	13.1	1160	8	0.750	6.3	0.367	3.83
8/19	153	8.9	1256	6	0.750	6.0	0.343	3.85
8/21	136	3.7	1008	1	0.750	6.1	0.386	3.97
8/24	135	13.4	1010	0	0.766	6.25	0.392	4.0
8/26	122	13.7	1120	2	0.750	6.3	0.322	4.02
8/28	179	11.4	920	1	0.750	6.25	0.570	4.04
N	25	25	25	25	25	25	25	25
$\bar{x}$	152.6	9.116	1054.5	11.92	675.84	6.21	0.450	3.958
σ	19.34	3.41	255.44	26.01	208.3	0.168	0.148	0.1079
C.V.%	12.67	37.41	24.22	218.20	30.82	2.71	33.0	2.73

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TABLE A-197. TOC FOR 6 DAY PENTACHLOROPHENOL UNIT

Chemical Compound: Pentachlorophenol θ_c =6 days

Parameter: TOC Volume of Reactor=3.255 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
7/1/81	206	9.1	1000	89	0	5.80	0.528	4.38
7/3	172	13.0	1140	2	0.500	5.80	0.387	6.12
7/6	145	6.0	1112	22	0.390	6.25	0.360	5.81
7/8	171	12.2	1264	3	0.550	6.40	0.383	5.68
7/10	165	11.4	1408	8	0.500	6.25	0.324	5.97
7/13	167	4.3	1240	24	0.300	6.30	0.376	6.04
7/15	145	5.4	1064	22	0.350	6.40	0.396	6.10
7/20	138	18.5	1052	5	0.5	6.25	0.363	6.04
7/22	151	7.0	1124	60	0.135	6.20	0.368	6.00
7/24	170	8.4	1334	74	0.25	6.40	0.348	6.30
7/29	160	13.1	1276	0	0.525	6.4	0.355	6.20
7/31	128	9.6	1248	1	0.55	5.8	0.263	5.63
8/3	143	7.1	1232	0	0.525	6.25	0.321	6.20
8/5	120	7.3	1216	0	0.525	6.25	0.273	6.20
8/7	143	10.3	1260	0	0.525	6.25	0.314	6.20
8/10	165	5.4	1096	0	0.500	6.25	0.416	6.40
8/12	146	8.5	1180	0	0.500	6.25	0.342	6.42
8/14	157	11.6	1608	10	0.500	5.9	0.255	5.97
8/17	144	8.2	1592	4	0.500	6.3	0.252	6.25
8/19	153	12.8	1588	26	0.400	5.9	0.251	6.12
8/21	136	3.0	1452	0	0.550	6.0	0.248	5.92
8/24	135	14.6	1500	0	0.540	6.25	0.249	6.00
8/26	122	9.2	1248	1	0.550	6.2	0.223	5.85
8/28	179	13.0	1020	0	0.550	6.25	0.485	5.92
N	24	24	24	24	24	24	24	24
$\bar{x}$	152.54	9.542	1262.67	14.625	446.46	6.18	0.336	5.988
σ	19.76	3.656	182.87	24.94	144.18	0.197	0.077	0.397
C.V.%	12.95	38.31	14.48	170.53	32.29	3.19	22.9	6.63

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TABLE A- 198. COD FOR 2 DAY PENTACHLOROPHENOL UNIT

Chemical Compound: Pentachlorophenol θ_c = 2 days

Parameter: COD Volume of Reactor = 3.129 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
7/10/81	490	10	728	20	1.500	6.25	1.936	1.84
7/31	400	35	544	18	1.30	6.00	2.030	1.97
8/7	400	48	196	16	0.950	6.40	6.01	1.93
8/14	500	42	1176	74	0.470	6.0	0.923	2.00
8/21	490	30	456	32	0.750	6.6	3.26	2.01
8/28	520	25	580	0	1.500	6.25	2.578	2.08
N	6	6	6	6	6	6	6	6
$\bar{x}$	466.67	31.67	616.67	26.67	1078.3	6.25	2.789	1.971
σ	52.79	13.43	333.89	25.35	424.0	0.232	1.756	0.081
C.V.%	11.31	42.41	54.14	95.05	39.32	3.71	62.9	4.11

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TABLE A-199. COD FOR 4 DAY PENTACHLOROPHENOL UNIT

Chemical Compound: Pentachlorphenol θ_c = 4 days

Parameter: COD Volume of Reactor - 3.069 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
7/31/81	525	42	1356	44	0.550	5.8	1.053	4.03
7/24	520	25	1028	0	0.750	6.40	1.523	4.09
7/31	400	25	768	116	0	5.80	1.417	3.68
8/7	400	28	880	0	0.750	6.40	1.356	4.09
8/14	500	22	1540	7	0.750	6.1	0.929	3.89
8/21	490	35	1008	1	0.750	6.10	1.39	3.97
8/28	520	19	920	1	0.750	6.25	1.657	4.04
N	7	7	7	7	7	7	7	7
$\bar{x}$	479.3	28	1071.4	24.14	6.413	6.12	1.332	3.96
σ	55.56	7.96	276.3	43.52	280.9	0.251	0.256	0.168
C.V.%	11.59	28.43	25.79	180.3	45.73	4.10	19.23	4.24

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TABLE A-200. COD FOR 6 DAY PENTACHLOROPHENOL UNIT

Chemical Compound: Pentachlorophenol θ_c = 6 days

Parameter: COD Volume of Reactor = 3.255 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
7/3/81	525	35	1140	2	0.500	5.8	1.181	6.12
7/17	480	21	1196	1	0.550	6.60	1.172	5.71
7/31	400	28	1248	1	0.550	5.80	0.824	5.63
8/7	400	25	1260	0	0.525	6.25	0.879	6.20
8/14	500	22	1608	10	0.500	5.9	0.812	5.97
8/21	490	25	1452	0	0.550	6.0	0.895	5.92
8/28	520	22	1020	0	0.550	6.25	1.41	5.92
N	7	7	7	7	7	7	7	7
$\bar{x}$	473.7	25.4	1274.8	2.0	0.528	6.08	1.025	5.92
σ	52.65	4.86	196.9	3.60	0.026	0.29	0.230	0.203
C.V.%	11.12	19.1	15.4	180	5.05	4.85	22.5	3.4

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TABLE A-201. BOD$_5$ FOR 2 DAY TRICHLOROETHYLENE UNIT

Chemical Compound: Trichloroethylene θ_c = 2 days

Parameter: BOD$_5$ Volume of Reactor = 3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
7/3/81	333	8.1	740	9	1.435	6.1	1.29	2.045
7/6	293	3.9	920	12	1.430	6.1	0.90	2.048
7/8	330	5.1	1190	2	1.512	6.2	0.81	2.007
7/10	267	1.6	1160	13	1.444	6.0	0.65	2.040
7/13	332	1.6	830	14	1.400	6.1	1.15	2.062
7/15	244	2.7	870	20	1.350	6.2	0.82	2.087
7/20	295	1.2	816	2	1.50	6.2	1.058	2.009
7/22	294	5.7	760	7	1.458	6.0	1.096	2.001
7/24	275	3.0	990	4	1.494	6.2	0.813	2.001
7/27	294	5.7	920	13	1.418	6.2	0.935	2.001
7/31	288	1.7	789	1	1.517	6.2	1.068	2.003
8/3	306	1.5	955	20	1.370	6.1	0.923	2.076
8/5	278	6.4	860	16	1.384	6.2	0.946	2.070
8/12	245	1.4	990	9	1.457	6.2	0.724	2.000
8/14	268	1.8	1210	1	1.518	6.1	0.638	2.001
8/17	349	3.52	1240	11	1.458	6.2	0.824	2.001
8/19	284	1.7	1048	6	1.486	6.2	0.793	2.001
8/21	248	1.6	940	5	1.486	6.0	0.747	2.001
8/24	352	6.2	892	2	1.50	6.1	1.137	2.011
8/26	275	3.0	920	5	1.484	6.2	0.875	2.001
8/28	283	2.1	968	26	1.32	6.2	0.856	2.001
N	21	21	21	21	21	21	21	21
$\bar{x}$	293.24	3.682	950.86	12.81	1.407	6.143	0.917	2.020
σ	33.92	3.113	149.01	16.93	0.2004	0.0811	0.198	0.0298
C.V.%	11.568	84.56	15.68	132.148	14.24	1.32	21.69	1.475

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TABLE A- 202. BOD$_5$ FOR 4 DAY TRICHLOROETHYLENE UNIT

Chemical Compound: Trichloroethylene θ_c = 4 days

Parameter: BOD$_5$ Volume of Reactor = 3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
7/8/81	330	3.5	1220	1	0.756	6.2	0.79	4.011
7/10	267	1.5	1550	10	0.710	6.1	0.49	4.095
7/13	332	2.3	1240	9	0.700	6.2	0.78	4.122
7/15	244	2.1	1260	6	0.723	6.2	0.57	4.072
7/17	309	1.4	1180	5	0.727	6.2	0.76	4.066
7/20	295	1.0	1473	114	0.007	6.2	0.586	4.373
7/22	294	3.0	1188	26	0.583	6.1	0.713	4.000
7/24	275	5.2	1187	7	0.714	6.2	0.678	4.000
7/27	294	3.0	1270	12	0.684	6.2	0.678	4.143
7/29	275	5.2	1435	7	0.722	6.2	0.561	4.074
7/31	288	2.0	1299	3	0.743	6.2	0.649	4.037
8/3	306	2.0	1515	13	0.690	6.2	0.591	4.137
8/5	278	1.85	1640	9	0.718	6.1	0.488	4.080
8/7	336	1.25	1420	3	0.745	6.2	0.693	4.032
8/10	358	0.8	1475	5	0.735	6.1	0.699	4.001
8/12	245	1.3	2000	6	0.738	6.1	0.353	4.002
8/14	268	1.0	1735	1	0.757	6.2	0.452	4.005
8/17	349	1.82	1610	3	0.747	6.1	0.624	4.003
8/19	284	1.0	1732	10	0.716	6.1	0.472	4.000
8/21	248	1.3	1430	4	0.740	6.2	0.508	4.000
8/24	352	3.3	1296	50	0.435	6.2	0.795	4.000
8/26	275	1.8	1210	22	0.613	6.1	0.655	4.005
8/28	283	2.9	1184	66	0.280	6.2	0.700	4.002
N	23	23	23	23	23	23	23	23
$\bar{x}$	295	2.19	1415	17.0	0.651	6.165	0.621	4.05
σ	33.94	1.227	220.0	26.3	0.180	0.048	0.1199	0.084
C.V.%	11.5	56.0	15.55	155	27.66	.789	19.311	2.08

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TABLE A-203. BOD$_5$ FOR 6 DAY TRICHLOROETHYLENE UNIT

Chemical Compound: Trichloroethylene

Parameter: BOD$_5$

θ_c = 6 days

Volume of Reactor = 2.97 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
7/3/81	333	7.2	1440	56	0.153	6.2	0.695	6.009
7/6	293	4.9	1100	30	0.262	6.1	0.787	6.007
7/8	330	6.3	1310	1	0.488	6.2	0.757	6.007
7/10	267	1.5	1500	6	0.460	6.1	0.526	6.021
7/13	332	3.2	1520	5	0.467	6.1	0.646	6.008
7/15	244	2.4	1420	4	0.473	6.0	0.500	5.988
7/17	309	3.3	1500	10	0.438	6.2	0.619	6.005
7/20	295	1.1	1480	10	0.437	6.2	0.599	6.008
7/22	294	3.2	1350	34	0.277	6.2	0.655	6.001
7/24	275	6.4	1570	2	0.484	6.1	0.518	6.005
7/27	294	3.2	1350	28	0.316	6.2	0.655	6.00
8/3	306	12	1258	27	0.313	6.1	0.719	6.00
8/5	278	2.4	1270	32	0.277	6.2	0.658	6.00
8/7	336	3.7	1171	40	0.200	6.2	0.863	5.96
8/10	358	2.8	1190	26	0.306	6.2	0.904	6.008
8/12	245	1.0	1697	81	0.0795	6.1	0.427	6.000
8/21	248	1.6	1200	8	0.438	6.2	0.621	6.005
8/26	275	2.9	1390	55	0.147	6.2	0.595	6.007
8/28	283	1.7	1356	8	0.444	6.2	0.627	6.011
N	19	19	19	19	19	19	19	19
$\bar{x}$	294.47	3.726	1372.21	24.37	0.339	6.158	0.6511	6.003
σ	32.77	2.684	153.48	22.008	.1304	0.0607	0.1202	0.122
C.V.%	11.13	72	11.18	90.308	38.49	0.0985	18.46	0.203

TABLE A-204. TOC FOR 4 DAY TRICHLOROETHYLENE UNIT

Chemical Compound: Trichloroethylene θ_c = 4 days

Parameter: TOC Volume of Reactor = 3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
7/3	175	13.0	820	6	0.702	6.2	0.625	4.109
7/8	195	10.5	1220	1	0.756	6.2	0.468	4.011
7/10	167	11.1	1550	10	0.710	6.1	0.311	4.095
7/13	177	8.4	1240	9	0.700	6.2	0.418	4.122
7/15	176	9.0	1260	6	0.723	6.2	0.409	4.072
7/17	204	9.6	1180	5	0.727	6.2	0.506	4.066
7/20	214	9.6	1473	114	0.007	6.2	0.425	4.373
7/22	196	8.2	1188	26	0.583	6.1	0.475	4.000
7/24	191	11.9	1187	7	0.714	6.2	0.471	4.000
7/27	199	10.8	1270	12	0.684	6.2	0.459	4.143
7/29	173	8.5	1435	7	0.722	6.2	0.353	4.074
7/31	171	10.6	1299	3	0.743	6.2	0.385	4.037
8/3	168	6.6	1515	13	0.690	6.2	0.325	4.137
8/5	163	11.6	1640	9	0.718	6.1	0.286	4.080
8/7	191	11.9	1420	3	0.745	6.2	0.394	4.032
8/10	185	5.4	1475	5	0.735	6.1	0.361	4.001
8/12	182	9.4	2000	6	0.738	6.1	0.266	4.002
8/14	169	10.5	1735	1	0.757	6.2	0.285	4.005
8/17	157	8.5	1610	3	0.747	6.1	0.285	4.003
8/19	170	8.3	1732	10	0.716	6.1	0.283	4.000
8/21	129	2.5	1430	4	0.740	6.2	0.264	4.000
8/24	153	12.8	1296	50	0.435	6.2	0.345	3.999
8/26	139	10.0	1210	22	0.613	6.1	0.331	4.005
8/28	258	2.1	1184	66	0.280	6.2	0.637	4.002
N	24	24	24	24	24	24	24	24
$\bar{x}$	179.25	9.19	1390	16.58	0.654	6.17	0.390	4.059
σ	25.93	2.79	247	25.87	0.176	0.048	0.104	0.083
C.V.%	14.47	30.40	17.78	156.0	26.98	0.780	26.76	2.055

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TABLE A-205. TOC FOR 2 DAY TRICHLOROETHYLENE UNIT

Chemical Compound: Trichloroethylene — θ_c = 2 days

Parameter: TOC — Volume of Reactor = 3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
7/6/81	158	15.2	920	12	1.430	6.0	0.487	2.048
7/8	195	13.0	1190	2	1.512	6.2	0.480	2.007
7/10	167	12.4	1160	13	1.444	6.0	0.408	2.040
7/13	177	10.8	830	14	1.400	6.1	0.615	2.062
7/15	176	14.9	870	20	1.350	6.2	0.592	2.087
7/20	214	15.2	816	2	1.50	6.2	0.768	2.009
7/22	196	8.4	760	7	1.458	6.0	0.731	2.001
7/24	191	9.3	990	4	1.494	6.2	0.565	2.001
7/27	199	12.2	920	13	1.418	6.2	0.633	2.001
7/31	171	4.3	789	1	1.517	6.2	0.634	2.003
8/3	168	30	955	20	1.370	6.1	0.507	2.076
8/5	163	50	860	16	1.384	6.2	0.555	2.070
8/10	185	5.6	700	80	0.569	6.2	0.774	2.001
8/12	182	7.9	990	9	1.457	6.2	0.538	2.000
8/14	169	11.4	1210	1	1.518	6.1	0.402	2.001
8/17	157	11.8	1240	11	1.458	6.2	0.371	2.001
8/19	170	10.7	1048	6	1.482	6.2	0.475	2.000
8/21	129	4.6	940	5	1.486	6.0	0.389	2.001
8/24	153	21	892	2	1.50	6.1	0.494	2.011
8/26	139	8.0	920	5	1.484	6.2	0.442	2.001
N	20	20	20	20	20	20	20	20
$\bar{x}$	172.95	13.835	950	12.15	1.412	6.14	0.543	2.021
σ	20.133	10.058	148.958	16.656	0.199	0.08	0.119	0.0297
C.V.%	11.641	72.701	15.68	137.09	14.12	0	21.83	1.472

TABLE A-206. TOC FOR 6 DAY TRICHLOROETHYLENE UNIT

Chemical Compound: Trichloroethylene θ_c = 6 days

Parameter: TOC Volume of Reactor = 2.97 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
7/3	175	19	1440	56	0.153	6.2	0.365	6.009
7/6	158	24	1100	30	0.262	6.1	0.425	6.007
7/8	195	16.2	1310	1	0.488	6.2	0.447	6.007
7/10	167	10.3	1500	6	0.460	6.1	0.329	6.021
7/13	177	12.3	1520	5	0.467	6.1	0.344	6.008
7/15	176	8.2	1420	4	0.473	6.0	0.361	5.988
7/17	204	6.0	1500	10	0.438	6.2	0.409	6.005
7/20	214	7.2	1480	10	0.437	6.2	0.435	6.008
7/22	196	7.5	1350	34	0.277	6.2	0.436	6.001
7/24	191	5.2	1570	2	0.484	6.1	0.360	6.005
7/27	199	12.0	1350	28	0.316	6.2	0.443	6.00
8/3	168	13.9	1258	27	0.313	6.1	0.395	6.00
8/5	163	12.8	1270	32	0.277	6.2	0.386	6.00
8/7	191	5.2	1171	40	0.200	6.2	0.490	5.96
8/10	185	11.5	1190	26	0.306	6.2	0.467	6.008
8/12	182	7.1	1697	81	0.0795	6.1	0.317	6.000
8/21	129	1.3	1200	8	0.438	6.2	0.323	6.005
8/26	139	4.2	1390	55	0.147	6.2	0.300	6.007
8/28	258	6.1	1356	8	0.444	6.2	0.571	6.011
N	19	19	19	19	19	19	19	19
$\bar{x}$	182.6	13.15	1372.2	24.4	0.340	6.16	0.400	6.003
σ	27.37	17.72	153.5	22.0	0.130	0.061	0.069	0.012
C.V.%	14.991	134.75	11.18	90.19	38.38	0.985	17.15	0.203

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TABLE A-207. COD FOR 2 DAY TRICHLOROETHYLENE UNIT

Chemical Compound: Trichloroethylene θ_c = 2 days

Parameter: COD Volume of Reactor = 3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
7/3/81	550	38	740	9	1.435	6.1	2.142	2.045
7/10	450	12	1160	13	1.444	6.0	1.099	2.040
7/17	575	22	820	72	0.826	6.1	2.021	2.366
7/24	520	23	990	4	1.494	6.2	1.538	2.001
7/31	525	22	789	1	1.517	6.2	1.948	2.003
8/14	550	21	1210	1	1.518	6.1	1.309	2.001
8/24	525	22	940	5	1.486	6.0	1.582	2.001
8/28	550	22	968	26	1.32	6.2	1.663	2.001
N	8	8	8	8	8	8	8	8
$\bar{x}$	530.6	22.75	952.12	16.37	1.38	6.11	1.662	2.0569
σ	37.36	7.10	169.28	23.9	0.23	0.083	0.359	0.1263
C.V.%	7.04	31.23	17.78	146.0	16.87	1.365	21.6[illegible]	6.14

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TABLE A-208. COD FOR 4 DAY TRICHLOROETHYLENE UNIT

Chemical Compound: Trichloroethylene θ_c = 4 days

Parameter: COD Volume of Reactor = 3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
7/3/81	550	32	820	6	0.702	6.2	1.964	4.00
7/10	450	15	1550	10	0.710	6.1	0.837	4.06
7/17	575	15	1180	5	0.727	6.2	1.427	4.00
7/24	520	32	1187	7	0.714	6.2	1.282	4.00
7/31	525	45	1299	3	0.743	6.2	1.183	4.037
8/7	525	30	1420	3	0.745	6.2	1.082	4.032
8/14	550	15	1735	1	0.757	6.2	0.928	4.004
8/21	525	28	1430	4	0.740	6.2	1.075	4.000
8/28	550	18	1184	66	0.280	6.2	1.360	4.002
N	9	9	9	9	9	9	9	9
$\bar{x}$	530	25.55	1311.66	11.66	0.6798	6.188	1.238	4.015
σ	35	10.47	262.87	20.54	0.0510	0	0.334	0.0223
C.V.%	6.60	40.99	20.04	176.158	21.64	0	26.95	0.556

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TABLE A-209. COD FOR 6 DAY TRICHLOROETHYLENE UNIT

Chemical Compound: Trichloroethylene θ_c = 6 days

Parameter: COD Volume of Reactor = 2.97 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
7/3/81	550	45	1440	56	0.153	6.2	1.148	6.0
7/10	450	10	1500	6	0.460	6.1	0.887	6.02
7/17	575	20	1500	10	0.438	6.2	1.152	6.0
7/24	520	22	1570	2	0.484	6.1	0.980	6.005
8/7	525	32	1171	40	0.200	6.2	1.348	5.96
8/21	525	25	1200	8	0.438	6.2	1.315	6.00
8/28	550	20	1356	8	0.444	6.2	1.219	6.011
N	7	7	7	7	7	7	7	7
$\bar{x}$	527.8	24.85	1391	18.5	0.373	6.17	1.149	5.999
σ	39.46	11.05	155.1	20.77	0.136	0.048	0.1679	0.0189
C.V.%	7.47	44.46	11.15	112.27	36.46	0.779	14.61	0.315

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TABLE A-210. BOD_5 FOR 2 DAY BIS(2-ETHYLHEXYL) PHTHALATE UNIT

Chemical Compound: Bis(2-ethylhexyl) phthalate θ_c = 2 days

Parameter: BOD_5 Volume of Reactor = 3.14 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
7/3/81	259.4	.64	932	14	1.390	6.2	0.791	2.09
7/6	265	2.30	828	4	1.450	6.1	0.895	2.11
7/8	297	1.30	792	2	1.480	6.5	1.118	2.09
7/10	270	1.90	666	11	1.380	6.3	1.171	2.08
7/13	327	1.89	944	0	1.500	6.4	1.017	2.09
7/15	250	1.90	781	0	1.500	6.0	0.881	2.09
7/17	234	.89	624	0	1.500	6.2	1.066	2.09
7/20	210	.51	760	6	1.400	6.3	0.798	2.15
7/22	297	.98	610	2	1.470	6.4	1.429	2.10
7/24	278	.37	646	4	1.450	6.4	1.263	2.10
7/27	298.2	0.87	808	0	1.435	6.4	1.084	2.09
7/29	222	1.4	433	4	1.500	6.4	1.505	2.08
7/31	239	0.88	732	20	1.300	6.3	0.943	1.98
8/3	235	0.73	916	0	1.500	6.2	0.729	2.09
8/5	282	1.15	756	4	1.500	6.3	1.078	2.04
8/7	290.3	1.11	732	8	1.450	6.4	1.164	2.05
8/10	335	0.39	668	0	1.570	6.3	1.449	2.0
8/12	225	0.28	1144	0	1.570	6.3	0.568	2.0
8/14	235	1.86	568	8	1.470	6.3	1.195	1.99
8/17	256	1.0	496	0	1.570	6.0	0.917	2.0
8/19	260	.85	768	0	1.570	6.0	0.932	2.0
8/21	245	2.8	1056	0	1.570	5.8	0.617	2.0
8/24	327	2.84	846	0	1.570	6.2	1.099	2.0
8/26	335	4.2	956	8	1.520	6.2	0.996	1.98
8/28	304	1.97	572	26	1.200	6.2	1.511	2.02
N	25	25	25	25	25	25	25	25
$\bar{x}$	270.6	1.4	761.48	4.84	472.6	6.24	1.05	2.05
σ	37.56	0.93	170.4	6.79	89.32	0.164	0.256	0.05
C.V.%	13.8	66.4	22.4	140.34	6.01	2.6	24.46	2.45

TABLE A-211. BOD$_5$ FOR 4 DAY BIS(2-ETHYLHEXYL) PHTHALATE UNIT

Chemical Compound: Bis(2-ethylhexyl) phthalate θ_c = 4 days

Parameter: BOD$_5$ Volume of Reactor = 3.04 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
7/3/81	259.4	1.04	780	8	0.670	6.2	0.977	4.12
7/6	265	2.50	1148	8	0.680	6.2	0.678	4.12
7/8	297	1.50	1195	0	0.750	6.4	0.753	4.05
7/10	270	2.15	1319	24	0.600	6.3	0.611	4.03
7/13	327	1.78	1412	0	0.750	6.4	0.702	4.05
7/15	250	2.20	1232	0	0.750	6.2	0.576	4.05
7/17	234	1.57	908	0	0.750	6.2	0.757	4.05
7/20	210	.76	1000	4	0.720	6.3	0.627	4.03
7/22	297	1.20	1006	0	0.690	6.0	0.839	4.41
7/24	278	.70	1194	6	0.710	6.4	0.706	4.04
7/27	298.3	0.71	1072	0	0.750	6.4	0.844	4.05
7/29	222	0.4	1168	0	0.750	6.4	0.576	4.05
7/31	239	0.59	1100	0	0.750	6.3	0.648	4.05
8/3	235.1	0.64	1108	2	0.750	6.2	0.623	3.98
8/5	292	1.18	980	4	0.750	6.3	0.889	3.88
8/7	290.3	1.22	1036	8	0.730	6.3	0.836	3.83
8/10	335	0.55	1112	0	0.760	6.2	0.885	4.0
8/12	225	0.17	1320	0	0.760	6.1	0.493	4.0
8/14	235	0.67	1200	6	0.740	6.3	0.584	3.89
8/17	256	0.80	1136	0	0.760	6.1	0.651	4.0
8/19	260	0.85	1060	0	0.760	6.2	0.720	4.0
8/24	327	1.00	1012	0	0.760	6.1	0.934	4.0
8/26	335	0.78	1140	2	0.740	6.2	0.863	4.02
8/28	304	0.52	1028	6	0.700	6.2	0.868	4.06
N	24	24	24	24	24	24	24	24
$\bar{x}$	272.55	1.06	1111	3.25	701.2	6.2	0.74	4.03
σ	37.67	0.606	137.99	5.37	141.8	0.11	0.131	0.105
C.V.%	13.8	57	12.4	16.5	20.2	1.77	17.8	2.6

TABLE A-212. BOD$_5$ FOR 6 DAY BIS(2-ETHYLHEXYL) PHTHALATE UNIT

Chemical Compound: Bis(2-ethylhexyl) phthalate θ_c = 6 days

Parameter: BOD$_5$ Volume of Reactor = 3.10 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
7/3/81	259.4	1.06	760	6	0.449	6.2	0.964	6.48
7/6	265	2.70	1172	12	0.410	6.2	0.639	6.36
7/8	297	3.30	1342	20	0.300	6.3	0.635	7.34
7/10	270	3.00	1507	106	0	6.1	0.498	5.11
7/13	327	2.64	1580	0	0.500	6.2	0.585	6.32
7/15	250	7.00	1431	0	0.500	6.4	0.510	6.32
7/17	234	5.58	1084	0	0.500	6.3	0.620	6.32
7/20	210	1.22	1140	0	0.500	6.3	0.529	6.32
7/22	297	.80	1264	19	0.380	6.3	0.675	6.19
7/27	298.3	0.81	1376	30	0.280	6.3	0.622	6.20
7/29	222	0.9	1343	6	0.465	6.2	0.467	6.28
8/3	235.1	0.89	1268	10	0.450	6.2	0.524	6.11
8/5	292	1.38	1260	12	0.450	6.4	0.676	5.92
8/7	290.3	1.03	1148	42	0.190	6.4	0.737	6.07
8/10	335	0.76	1368	4	0.490	6.2	0.692	6.00
8/12	225	0.36	1620	8	0.488	6.2	0.392	6.00
8/17	256	0.80	1272	0	0.526	6.0	0.55	6.00
8/19	260	0.59	1204	28	0.320	6.0	0.590	6.00
8/21	245	0.60	1004	8	0.450	6.0	0.639	6.08
8/28	304	2.08	1108	16	0.400	6.3	0.788	6.02
N	20	20	20	20	20	20	20	20
$\bar{x}$	268.6	1.87	1262.6	16.4	416.95	6.2	0.62	6.2
σ	35.3	1.76	201	2.4	1513	0.125	0.13	0.39
C.V.%	13.1	93.8	15.9	146.9	36.3	2	20.4	6.4

TABLE A-213. TOC FOR 2 DAY BIS(2-ETHYLHEXYL) PHTHALATE UNIT

Chemical Compound: Bis(2-ethylhexyl) phthalate θ_c = 2 days

Parameter: TOC Volume of Reactor = 3.14 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
7/3/81	168	9.2	932	14	1.390	6.2	0.512	2.09
7/6	163	6.3	828	4	1.450	6.1	0.551	2.11
7/8	180	11.2	792	2	1.480	6.5	0.677	2.09
7/10	163	11.7	666	11	1.380	6.3	0.707	2.08
7/15	158	10.5	781	0	1.500	6.0	0.556	2.09
7/17	149	12.4	624	0	1.500	6.2	0.678	2.09
7/20	165	8.5	760	6	1.400	6.3	0.627	2.15
7/22	174	5.6	610	2	1.470	6.4	0.837	2.10
7/24	168	7.6	646	4	1.450	6.4	0.763	2.10
7/27	164	8.6	808	0	1.500	6.4	0.596	2.09
7/29	167	5.0	433	4	1.435	6.4	1.13	2.08
7/31	149	7.5	732	22	1.300	6.3	0.588	1.98
8/3	137	4.8	916	0	1.500	6.2	0.430	2.09
8/5	161	8.2	756	4	1.500	6.3	0.620	2.04
8/7	172	2.4	732	8	1.450	6.4	0.690	2.05
8/10	178	2.3	668	0	1.570	6.3	0.770	2.0
8/12	157	12.1	1144	0	1.570	6.3	0.397	2.0
8/14	167	14.5	568	8	1.470	6.3	0.849	1.99
8/17	150	10.8	496	0	1.570	6.3	0.874	2.0
8/19	143	5.9	768	0	1.570	6.0	0.512	2.0
8/21	125	4.3	1056	0	1.570	5.8	0.315	2.0
8/24	137	11.9	846	0	1.570	6.2	0.4604	2.0
8/26	116	10.3	956	8	1.520	6.2	0.345	1.98
8/28	152	5.8	572	26	1.200	6.2	0.756	2.02
N	24	24	24	24	24	24	24	24
$\bar{x}$	156.8	8.23	753.5	5.13	1471.5	6.25	0.64	0.15
σ	16.2	3.32	170.1	7.1	91.1	0.16	0.19	0.09
C.V.%	10.3	40.3	22.6	137.8	6.2	2.5	29.6	62.4

TABLE A-214. TOC FOR 4 DAY BIS(2-ETHYLHEXYL) PHTHALATE UNIT

Chemical Compound: Bis(2-ethylhexyl) phthalate θ_c = 4 days

Parameter: TOC Volume of Reactor = 3.04 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
7/3/81	168	3.1	780	8	0.670	6.2	0.632	4.12
7/6	163	7.5	1148	8	0.680	6.2	0.417	4.12
7/8	180	1.7	1195	0	0.750	6.4	0.456	4.05
7/10	163	12.5	1319	24	0.600	6.3	0.369	4.03
7/15	158	12.1	1232	0	0.750	6.2	0.376	4.05
7/17	149	7.8	908	0	0.750	6.2	0.482	4.05
7/20	165	8.3	1000	4	0.720	6.3	0.492	4.03
7/22	174	6.6	1006	0	0.690	6.0	0.491	4.41
7/24	168	7.0	1194	6	0.710	6.4	0.426	4.04
7/27	164	9.4	1072	0	0.750	6.4	0.464	4.05
7/29	167	5.0	1168	0	0.750	6.4	0.433	4.05
7/31	149	5.6	1100	0	0.750	6.3	0.404	4.05
8/3	137	4.6	1108	2	0.750	6.2	0.363	3.98
8/5	161	12.1	980	4	0.750	6.3	0.490	3.88
8/7	172	8.4	1036	8	0.730	6.3	0.495	3.83
8/10	178	7.3	1112	0	0.760	6.2	0.470	4.0
8/12	157	8.2	1320	0	0.760	6.1	0.344	4.0
8/14	167	10.4	1200	6	0.740	6.3	0.415	3.89
8/17	150	12.7	1136	0	0.760	6.1	0.382	4.0
8/19	143	7.4	1080	0	0.760	6.2	0.396	4.0
8/21	125	2.4	1120	0	0.760	5.6	0.296	4.0
8/24	137	12.3	1012	0	0.760	6.1	0.391	4.0
8/28	152	6.8	1028	6	0.700	6.2	0.434	4.06
N	23	23	23	23	23	23	23	23
$\bar{x}$	158.6	7.79	1096	3.3	730	6.21	0.43	4.16
σ	13.97	3.22	124.7	5.48	39.7	0.171	0.069	0.628
C.V.%	8.81	41.35	11.37	165.9	5.4	2.76	16.0	15.1

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TABLE A-215. TOC FOR 6 DAY BIS(2-ETHYLHEXYL) PHTHALATE UNIT

Chemical Compound: Bis(2-ethylhexyl) phthalate θ_c = 6 days

Parameter: TOC Volume of Reactor = 3.16 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
7/3/81	168	25.0	760	6	0.440	6.2	0.624	6.48
7/6	163	7.0	1172	12	0.410	6.2	0.393	6.36
7/8	180	14.3	1342	20	0.300	6.3	0.385	7.34
7/10	163	14.1	1507	106	0	6.1	0.301	5.11
7/15	158	16.9	1431	0	0.500	6.4	0.322	6.32
7/17	149	21.0	1084	0	0.500	6.3	0.395	6.32
7/20	165	9.8	1140	0	0.500	6.3	0.415	6.32
7/22	174	7.8	1264	19	0.380	6.3	0.395	6.19
7/27	164	10.3	1376	36	0.280	6.3	0.342	6.20
7/29	167	6.4	1343	6	0.465	6.2	0.351	6.28
8/3	137	7.1	1268	10	0.450	6.2	0.305	6.11
8/5	161	12.1	1260	12	0.450	6.4	0.373	5.92
8/7	172	7.9	1148	42	0.190	6.4	0.437	6.07
8/10	178	7.2	1368	4	0.490	6.2	0.368	6.0
8/12	157	4.5	1620	8	0.488	6.2	0.274	6.0
8/17	150	8.6	1272	0	0.526	6.5	0.349	6.0
8/19	143	7.3	1204	28	0.320	6.4	0.346	6.0
8/28	152	9.6	1108	16	0.400	6.3	0.388	6.02
N	18	18	18	18	18	18	18	18
$\bar{x}$	161.2	10.94	1259	18.1	393.8	6.29	0.376	5.7
σ	11.7	5.45	187.9	25.2	134.4	0.1	0.075	1.58
C.V.%	7.26	49.8	14.9	139.4	34.1	1.59	19.94	27.9

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TABLE A-216. COD FOR 2 DAY BIS(2-ETHYLHEXYL) PHTHALATE UNIT

Chemical Compound: Bis(2-ethylhexyl) phthalate θ_c =2 days

Parameter: COD Volume of Reactor =3.14 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
7/3/81	530	29	932	14	1.390	6.2	1.617	2.09
7/10	500	20	666	11	1.380	6.3	2.169	2.08
7/17	510	25	624	0	1.500	6.2	2.324	2.09
7/24	530	21	646	4	1.450	6.4	2.408	2.10
7/31	480	22	732	20	1.300	6.3	1.895	1.98
8/7	475	28	732	8	1.450	6.4	1.905	2.05
8/14	750	20	568	8	1.470	6.3	3.815	1.99
8/21	480	32	1056	0	1.570	5.8	1.209	2.0
8/28	500	22	572	26	1.200	6.2	2.485	2.02
N	9	9	9	9	9	9	9	9
$\bar{x}$	528	24.3	725	10	1.412	6.2	2.203	2.04
σ	86	4.4	166	8.8	110.6	0.18	0.728	0.047
C.V.%	16.2	18	22.8	88	7.8	2.9	33.0	2.3

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TABLE A-217. COD FOR 4 DAY BIS(2-ETHYLHEXYL) PHTHALATE UNIT

Chemical Compound: Bis(2-ethylhexyl) phthalate θ_c = 4 days

Parameter: COD

Volume of Reactor = 3.04 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
7/3/81	530	29	964	8	0.670	6.2	1.615	4.12
7/10	500	18	1319	24	0.600	6.3	1.131	4.03
7/17	510	32	908	0	0.750	6.2	1.650	4.05
7/24	530	18	1194	6	0.710	6.4	1.346	4.04
7/31	480	25	1100	0	0.750	6.3	1.302	4.05
8/7	475	22	1036	8	0.730	6.3	1.368	3.83
8/14	750	22	1200	6	0.740	6.3	1.865	3.89
8/21	480	25	1120	0	0.760	5.6	1.137	4.0
8/28	500	18	1028	6	0.700	6.2	1.428	4.06
N	9	9	9	9	9	9	9	9
$\bar{x}$	528.3	23.22	1096.5	6.4	712	6.2	1.43	4.0
σ	85.6	5.0	128.3	7.4	50.9	0.23	0.24	0.09
C.V.%	16.2	21.6	11.7	114.8	7.15	3.8	17.1	2.3

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TABLE A-218. COD FOR 6 DAY BIS(2-ETHYLHEXYL) PHTHALATE UNIT

Chemical Compound: Bis(2-ethylhexyl)phthalate θ_c = 6 days

Parameter: COD Volume of Reactor = 3.16 liters

Date	Si	Se	X	Xe	Fw	F	F/M	θ_c days
7/3/81	530	30	1068	6	0.440	6.2	1.402	6.48
7/10	500	19	1507	106	0	6.1	0.922	5.11
7/17	510	35	1084	0	0.500	6.3	1.351	6.32
8/7	475	22	1148	42	0.190	6.4	1.21	6.07
8/21	480	25	1004	8	0.450	6.4	1.394	6.08
8/28	500	20	1108	16	0.400	6.3	1.296	6.02
N	6	6	6	6	6	6	6	6
$\bar{x}$	499	25.2	1153	29.7	330	6.3	1.26	6.01
σ	40.1	6.24	179.8	40.2	194.3	0.12	0.18	0.48
C.V.%	4	24.8	15.6	135.5	58.9	1.86	14.4	7.9

TABLE A-219. BOD_5 FOR 2 DAY BIS(2-ETHYLHEXYL) PHTHALATE, TRICHLOROETHYLENE AND PENTACHLOROPHENOL COMBINED UNIT

Chemical Compound: Combined: Bis(2-ethylhexyl) phthalate θ_c = 2 days
Trichloroethylene, Pentachlorophenol

Parameter: BOD5
Volume of Reactor = 3.13 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
7/3/81	300	7.8	467	5	1.500	6.2	1.83	1.98
7/6	287	5.0	686	0	1.500	6.0	1.16	2.09
7/8	260	3.3	812	4	1.500	6.3	0.93	2.03
7/10	315	9.2	786	28	1.260	6.2	1.14	2.00
7/13	297	8.4	447	0	1.50	6.25	1.91	2.09
7/15	230	15.6	461	0	1.50	6.0	1.58	2.09
7/17	207	14.5	470	30	1.00	6.20	1.25	2.08
7/20	233	7.1	372	5	1.50	6.0	1.73	1.96
7/22	244	16.4	368	0	1.50	5.90	1.80	2.09
7/24	315	7.0	382	3	1.50	6.50	2.47	2.00
7/27	188	6.6	359	12	1.29	6.20	1.49	2.02
7/29	210	33	396	13	1.29	6.0	1.46	2.04
7/31	265	35.2	450	0	1.50	6.2	1.68	2.09
8/3	232	10.6	489	20	1.33	6.0	1.31	1.92
8/5	330	15.0	565	14	1.38	6.0	1.61	2.01
8/7	304	3.8	784	8	1.50	6.0	1.07	1.99
8/10	214	6.6	464	14	1.20	6.0	1.27	2.20
8/12	315	8.0	600	32	1.00	6.2	1.50	2.20
8/14	280	10.0	700	41	1.10	6.3	1.16	2.00
8/17	294	2.6	686	39	0.75	6.4	1.26	2.54
8/19	254	4.0	696	37	0.95	6.3	1.06	2.26
8/24	340	4.4	730	16	1.40	6.2	1.33	2.00
8/26	289	6.3	730	28	1.35	6.2	1.13	1.91
8/28	262	2.5	830	16	1.42	6.2	0.90	2.00
N	25	25	25	25	25	25	25	25
$\bar{x}$	270.6	9.94	579	16.8	1.30	6.15	1.326	2.08
σ	42.1	8.30	162	15.5	0.243	0.151	0.462	0.142
C.V.%	15.6	83.5	28.0	92.3	18.6	2.45	34.8	6.83

TABLE A- 220. BOD_5 FOR 4 DAY BIS(2-ETHYLHEXYL) PHTHALATE, TRICHLOROETHYLENE AND PENTACHLOROPHENOL COMBINED UNIT

Chemical Compound: Combined: Bis(2-ethylhexyl) phthalate, Trichloroethylene, Pentachlorophenol θ_c = 4 days

Parameter: BOD_5 Volume of Reactor = 3.14 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
7/3/81	300	5.5	1072	6	0.750	6.00	0.777	3.95
7/6	287	4.3	729	18	0.550	6.20	1.125	4.15
7/8	260	2.5	901	39	0.400	6.00	0.794	4.15
7/10	315	2.1	707	55	0	6.30	1.273	4.45
7/17	207	1.7	790	6	0.70	6.30	0.757	4.11
7/20	233	8.0	877	6	0.75	5.90	0.718	3.91
7/22	244	7.0	906	4	0.75	6.00	0.742	4.00
7/24	315	3.7	842	2.3	0.75	6.00	1.031	4.07
7/27	188	6.9	729	12	0.62	6.20	0.742	4.13
7/29	210	17.2	872	9	0.62	5.90	0.651	4.33
7/31	265	8.0	560	10	0.62	6.00	1.304	4.11
8/3	232	6.0	728	16	0.64	6.00	0.877	3.85
8/5	330	11.0	705	33	0.41	5.80	1.245	4.02
8/7	203	17.9	888	52	0.38	6.00	0.942	3.64
8/10	214	20.5	808	12	0.66	6.00	0.729	4.03
8/12	315	22.2	760	6	0.75	6.20	1.178	3.85
8/14	280	21.0	1020	28	0.55	6.20	0.780	4.03
8/17	294	4.7	1158	16	0.65	6.20	0.722	4.11
8/19	254	1.2	1068	14	0.59	6.25	0.682	4.48
8/21	290	4.2	1912	16	0.65	6.20	0.815	4.02
8/24	340	3.3	1520	20	0.68	6.20	0.636	3.98
8/26	289	0.8	940	4	0.75	6.20	0.874	4.00
8/28	262	0.5	1290	4	0.76	6.30	0.587	4.00
N	25	25	25	25	25	25	25	25
$\bar{x}$	270.2	6.86	880	18.25	0.585	6.102	0.869	4.040
σ	41.9	6.27	227	15.13	0.189	0.165	0.265	0.233
C.V.%	15.5	91.4	25.8	82.9	32.3	2.70	30.5	5.77

TABLE A-221. BOD$_5$ FOR 6 DAY BIS(2-ETHYLHEXYL) PHTHALATE, TRICHLOROETHYLENE AND PENTACHLOROPHENOL COMBINED UNIT

Chemical Compound: Combined: Bis(2-ethylhexyl) phthalate, Trichloroethylene, Pentachlorophenol θ_c = 6 days

Volume of Reactor = 3.04 liters

Parameter: BOD$_5$

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
7/1/81	301	1.7	1602	71	0	6.20	0.522	7.68
7/3	300	2.1	1167	17	0.300	6.20	0.734	7.14
7/6	287	1.6	1100	15	0.400	6.00	0.725	5.93
7/10	315	2.6	738	10	0.390	6.40	1.219	5.97
7/13	297	4.5	701	30	0.25	6.25	1.253	4.87
7/15	230	4.2	780	6	0.50	5.90	0.824	5.41
7/17	207	11.3	1280	18	0.38	6.10	0.467	6.10
7/20	233	12.0	800	0	0.50	6.00	0.827	6.08
7/22	244	20.0	1001	0	0.50	6.30	0.728	6.08
7/24	315	22.3	1102	3	0.50	6.40	0.866	5.80
7/27	188	17.8	876	17	0.39	6.00	0.610	5.53
7/29	210	24.0	1144	13	0.39	6.00	0.521	6.28
7/31	265	33.3	710	32	0.24	6.30	1.114	4.87
8/3	232	11.7	1010	30	0.30	6.20	0.675	5.46
8/5	330	16.1	920	28	0.25	6.00	1.019	6.21
8/7	304	34.3	974	29	0.24	6.00	0.887	6.20
8/10	214	37.3	894	30	0.25	6.20	0.703	5.62
8/12	315	25.2	920	8	0.43	5.80	0.941	6.09
8/14	280	20.6	1210	58	0.100	6.00	0.658	5.97
8/17	294	19.2	1106	16	0.45	6.40	0.806	5.27
8/19	254	17.2	1022	26	0.30	6.35	0.748	5.79
8/21	290	7.5	1060	28	0.28	6.20	0.803	5.98
8/24	340	5.6	1400	16	0.41	6.10	0.702	6.01
8/26	289	11.2	1230	19	0.37	6.20	0.690	6.05
8/28	262	7.7	1190	32	0.27	6.20	0.646	6.04
N	28	28	28	28	28	28	28	28
$\bar{x}$	260	14.9	1037	22.1	0.339	6.15	0.787	5.93
σ	68.4	10.9	219	16.4	0.124	0.164	0.201	0.600
C.V.%	26.3	71.2	21.1	74.3	36.6	2.67	25.5	10.1

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TABLE A-222. TOC FOR 2 DAY BIS(2-ETHYLHEXYL) PHTHALATE, TRICHLOROETHYLENE AND PENTACHLOROPHENOL COMBINED UNIT

Chemical Compound: Combined: Bis(2-ethylhexyl) phthalate, Trichloroethylene, Pentachlorophenol θ_c = 2 days

Parameter: TOC   Volume of Reactor = 3.13 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
7/1/81	188	18.8	749	54.6	0.750	6.00	0.697	2.36
7/3	174	24	467	5	1.500	6.20	1.06	1.98
7/6	179	14.5	686	0	1.500	6.00	0.725	2.09
7/8	157	26.1	812	4	1.500	6.30	0.552	2.03
7/10	189	35.5	786	28	1.260	6.20	0.687	2.00
7/13	186	30.0	447	0	1.50	6.25	1.19	2.09
7/15	171	44.0	461	0	1.50	6.00	1.02	2.09
7/17	169	36	470	30	1.00	6.20	1.03	2.08
7/20	152	28	372	5	1.50	6.00	1.13	1.96
7/22	161	20	368	0	1.50	5.90	1.18	2.09
7/24	189	20.8	382	3	1.50	6.50	1.50	1.50
7/27	174	43	359	12	1.29	6.20	1.38	2.02
7/29	159	17.8	396	13	1.29	6.00	1.11	2.04
7/31	154	20	450	0	1.50	6.20	0.976	2.09
8/3	149	13.7	489	20	1.33	6.00	0.841	1.92
8/5	177	22.0	565	14	1.38	6.00	0.865	2.01
8/7	249	17.1	784	8	1.50	6.00	0.877	1.99
8/10	163	14.6	464	14	1.20	6.00	0.970	2.20
8/12	148	18.5	600	32	1.0	6.20	0.704	2.20
8/14	148	19.0	700	41	1.10	6.30	0.613	2.00
8/17	160	14.0	686	39	0.75	6.40	0.687	2.54
8/19	146	9.9	696	37	0.95	6.30	0.608	2.26
8/24	159	12.3	730	16	1.40	6.20	0.621	2.00
8/26	135	21	730	28	1.35	6.20	0.527	1.91
8/28	197	3.7	830	16	1.42	6.20	0.677	2.00
N	25	25	25	25	25	25	25	25
$\bar{x}$	169	21.77	579.16	16.78	1.303	6.15	0.889	2.08
σ	23.14	9.844	162.06	15.49	0.243	0.151	0.264	0.14
C.V.%	13.67	45.213	28.0	92.28	18.67	2.462	29.7	6.83

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TABLE A-223. TOC FOR 4 DAY BIS(2-ETHYLHEXYL) PHTHALATE, TRICHLOROETHYLENE AND PENTACHLOROPHENOL COMBINED UNIT

Chemical Compound: Combined: Bis(2-ethylhexyl) phthalate, Trichloroethylene, Pentachlorophenol θ_c = 4 days

Parameter: TOC   Volume of Reactor = 3.14 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
7/3/81	174	12.5	1076	6	0.750	6.00	0.449	3.95
7/6	179	14.2	729	18	0.550	6.20	0.701	4.15
7/8	157	17.3	901	39	0.400	6.00	0.484	4.15
7/10	189	18.9	707	75	0	6.30	0.764	3.26
7/13	186	10.4	541	30	0.45	6.40	0.008	3.35
7/15	171	11.0	585	38	0.20	5.80	0.777	4.30
7/17	169	20.0	790	6	0.70	6.30	0.618	4.11
7/20	152	22.0	877	6	0.75	5.90	0.468	3.91
7/22	161	16.1	906	4	0.75	6.00	0.489	4.00
7/24	189	26.8	842	2.3	0.75	6.00	0.618	4.07
7/27	174	21	720	12	0.62	6.20	0.686	4.13
7/29	159	19.6	872	9	0.62	5.90	0.493	4.33
7/31	154	15.5	560	10	0.62	6.00	0.758	4.11
8/3	149	17.5	728	16	0.64	6.00	0.563	3.85
8/5	177	16.7	705	33	0.41	5.80	0.668	4.02
8/7	249	23.0	888	52	0.38	6.00	0.772	3.64
8/10	163	22.2	808	12	0.66	6.00	0.555	4.03
8/12	148	32.0	761	6	0.75	6.20	0.554	3.85
8/14	148	21.0	1020	28	0.55	6.20	0.413	4.03
8/17	160	14.5	1158	16	0.65	6.20	0.393	4.11
8/19	146	11.3	1060	14	0.59	6.25	0.429	4.48
8/24	159	29	1520	20	0.68	6.20	0.649	3.98
8/26	135	11.5	940	4	0.75	6.20	0.408	4.00
8/28	197	7.2	1290	4	0.76	6.30	0.441	4.00
N	25	25	25	25	25	25	25	25
$\bar{x}$	168	17.0	880	18.25	0.585	6.102	0.583	4.040
σ	23.1	6.32	227	15.13	0.189	0.165	0.156	0.233
C.V.%	13.8	37.2	25.8	82.9	32.3	2.70	26.7	5.77

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TABLE A-224. TOC FOR 6 DAY BIS(2-ETHYLHEXYL) PHTHALATE, TRICHLOROETHYLENE AND PENTACHLOROPHENOL COMBINED UNIT

Chemical Compound: Combined: Bis(2-ethylhexyl) phthalate, Trichloroethylene,Pentachlorophenoθ_c = 6 days

Parameter: TOC Volume of Reactor = 3.04 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
7/1/81	188	14.1	1602	91	0	6.20	0.326	6.00
7/3	174	13.2	1167	17	0.300	6.20	0.426	7.14
7/6	179	11.6	1100	15	0.400	6.00	0.452	5.93
7/10	189	21.8	738	10	0.390	6.40	0.732	5.97
7/13	186	23.0	701	30	0.250	6.25	0.785	4.87
7/15	171	12.1	780	6	0.500	5.90	0.612	5.41
7/17	169	28.0	1280	18	0.380	6.10	0.382	6.10
7/20	152	23.0	800	0	0.500	6.00	0.540	6.08
7/22	161	20.1	1001	0	0.500	6.30	0.480	6.08
7/24	189	29.0	1102	3	0.500	6.40	0.520	5.80
7/27	174	18.8	876	17	0.390	6.00	0.564	5.53
7/29	159	22.7	1144	13	0.390	6.00	0.395	6.28
7/31	154	32.0	710	32	0.240	6.30	0.647	4.76
8/3	149	18.3	1010	30	0.300	6.20	0.433	5.46
8/5	177	30.0	920	28	0.250	6.00	0.547	6.21
8/7	249	40.0	974	29	0.240	6.00	0.727	6.20
8/10	163	32.0	894	30	0.250	6.20	0.535	5.62
8/12	148	32.0	920	8	0.430	5.80	0.442	6.09
8/14	148	23.0	1210	58	0.100	6.00	0.348	5.97
8/17	160	19.4	1106	16	0.450	6.40	0.439	5.27
8/19	146	13.3	1022	26	0.300	6.35	0.430	5.79
8/21	150	9.0	1060	28	0.280	6.20	0.416	5.98
8/24	159	21.0	1400	16	0.410	6.10	0.328	6.01
8/26	135	25.0	1230	19	0.370	6.20	0.322	6.05
8/28	197	12.2	1190	32	0.270	6.20	0.486	6.04
N	25	25	25	25	25	25	25	25
$\bar{x}$	169	21.8	1037	22.1	0.339	6.15	0.486	5.93
σ	23.34	7.92	219	16.4	0.124	0.164	0.133	0.600
C.V.%	13.8	36.3	21.1	74.3	36.6	2.67	27.5	10.1

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TABLE A-225. COD FOR 2 DAY BIS(2-ETHYLHEXYL) PHTHALATE, TRICHLOROETHYLENE AND PENTACHLOROPHENOL COMBINED UNIT

Chemical Compound: Combined: Bis(2-ethylhexyl) phthalate Trichloroethylene, Pentachlorophenol θ_c = 2 days

Parameter: COD Volume of Reactor= 3.13 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
7/3/81	525	45.0	467	5	1.500	6.2	3.21	1.98
7/10	540	78.0	786	28	1.260	6.2	1.96	2.00
7/17	480	80	470	30	1.00	6.2	2.91	2.08
7/24	680	45	382	3	1.50	6.5	5.33	2.00
7/31	475	60	450	0	1.50	6.2	3.01	2.09
8/7	800	42	784	8	1.50	6.0	2.82	1.99
8/14	580	48	700	41	1.10	6.3	2.40	2.00
8/28	535	28	1100	16	1.46	6.2	1.39	2.00
N	8	8	8	8	8	8	8	8
$\bar{x}$	577	53	642	16	1.35	6.23	2.88	2.02
σ	111	18	244	15.0	0.205	0.14	1.16	0.04
C.V.%	19.21	34.05	38.1	91.57	15.18	2.23	40.3	2.10

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TABLE A-226. COD FOR 4 DAY BIS(2-ETHYLHEXYL) PHTHALATE, TRICHLOROETHYLENE AND PENTACHLOROPHENOL COMBINED UNIT

Chemical Compound: **Combined:** Bis(2-ethylhexyl) phthalate, Trichloroethylene, Pentachlorophenol θ_c = 4 days

Parameter: COD Volume of Reactor = 3.14 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
7/3/81	525	30	1072	6	0.750	6.0	1.349	3.95
7/10	540	38	707	75	0.	6.3	2.207	3.26
7/17	480	18	790	6	0.70	6.3	1.756	4.11
7/24	680	48	842	2.3	0.75	6.0	2.225	4.07
7/31	475	50	560	10	0.62	6.0	2.337	4.11
8/7	800	55	888	52	0.38	6.0	2.479	3.64
8/14	580	40	1020	28	0.55	6.2	1.617	4.03
8/21	550	31	1012	16	0.65	6.2	1.545	4.02
8/28	535	25	1290	4	0.76	6.3	1.198	4.00
N	9	9	9	9	9	9	9	9
$\bar{x}$	574	37.2	909	22.1	0.57	6.14	1.857	3.91
σ	104	12.32	216	25.37	0.25	0.14	0.465	0.28
C.V.%	18.13	33.09	23.86	114.56	43.08	2.32	25.06	7.22

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TABLE A-227. COD FOR 6 DAY BIS(2-ETHYLHEXYL) PHTHALATE, TRICHLOROETHYLENE AND PENTACHLOROPHENOL COMBINED UNIT

Chemical Compound: Combined: Bis(2-ethylhexyl) phthalate, Trichloroethylene, Pentachlorophenol θ_C = 6 days

Parameter: COD Volume of Reactor = 3.04 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
7/3/81	525	38	1167	17	0.30	6.2	1.323	7.14
7/10	540	39	738	10	0.39	6.4	2.217	5.97
7/17	480	55	1280	18	0.38	6.1	1.084	6.10
7/24	680	92	1102	3	0.50	6.4	1.870	5.80
7/31	475	115	710	32	0.24	6.3	1.997	4.76
8/7	800	65	974	29	0.24	6.0	2.334	6.20
8/14	580	65	1210	58	0.10	6.0	1.362	5.97
8/21	550	45	1060	28	0.28	6.2	1.524	5.98
8/28	535	28	1190	32	0.27	6.2	1.320	6.04
N	9	9	9	9	9	9	9	9
$\bar{x}$	574	60.2	1048	25.2	0.267	6.2	1.670	6.00
σ	104.07	28.06	204	15.94	0.151	0.15	0.446	0.61
C.V.%	18.13	46.59	19.5	63.21	56.6	2.42	26.7	10.10

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TABLE A-228. BOD$_5$ DATA FOR 2 DAY TOLUENE UNIT

Chemical Compound: Toluene θ_c = 2 days

Parameter: BOD$_5$ Volume of Reactor = 3.129 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
10/2 /81	217.8	1.0	560	2	1.540	6.3	1.13	2.0
10/5	165.6	0.51	592	1	1.399	6.2	0.80	1.99
10/7	157.4	0.72	644	0	1.501	6.4	0.72	2.0
10/9	195.7	0.74	536	2	1.524	6.6	1.11	1.99
10/12	212.5	2.5	380	8	1.435	6.3	1.62	2.0
10/14	221	1.0	588	5	1.500	6.3	1.09	2.0
10/16	160	0.6	304	2	1.530	6.4	1.55	2.0
10/19	175	0.75	682	3	1.530	6.4	0.76	2.0
10/21	171	1.41	504	6	1.519	6.2	0.97	1.99
10/23	91.5	1.3	492	17	1.369	5.8	0.47	1.99
10/26	131	0.85	528	4	1.500	6.10	0.69	2.0
10/28	132	1.47	548	0	1.473	6.40	0.71	1.99
10/30	135	0.5	580	5	1.500	6.20	0.66	2.0
11/2	189.20	0.88	664	3	1.460	5.9	0.774	1.99
11/4	238	2.6	520	2	1.500	6.0	0.791	2.05
11/6	163.5	0.62	796	0	1.340	6.4	0.605	1.99
11/9	197.5	3.30	568	5	1.500	5.90	0.94	2.0
11/11	186.7	2.08	584	1	1.540	6.6	0.91	2.0
11/13	190.5	2.40	484	1	1.500	6.30	1.14	2.06
11/16	149.8	2.0	528	0	1.56	6.0	0.78	2.0
11/18	255	1.59	426	6	1.44	6.2	1.71	2.0
11/20	154	2.28	432	3	1.51	6.0	0.98	1.99
11/23	260	2.22	448	0	1.56	6.3	1.68	2.0
11/25	160	2.23	500	4	1.49	6.4	0.943	2.0
N	24	24	24	24	24	24	24	24
$\bar{x}$	179.6	1.48	537	3.3	1.488	6.23	0.983	2.0
σ	40.85	0.812	103.2	3.68	0.057	0.21	0.346	0.17
C.V.%	22.74	54.86	19.22	111.5	3.83	3.37	35.2	0.85

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TABLE A-229. BOD_5 DATA FOR 4 DAY TOLUENE UNIT

Chemical Compound: Toluene θ_c = 4 days

Parameter: BOD_5 Volume of Reactor = 3.069

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
10/2 /81	217.8	1.1	628	2	0.750	6.3	1.02	4.0
10/5	165.6	1.1	980	1	0.661	6.3	0.50	3.88
10/7	157.4	0.67	764	0	0.868	6.3	0.61	3.23
10/9	195.7	0.43	884	10	0.670	6.3	0.65	4.02
10/12	212.5	1.60	800	8	0.685	6.4	0.79	4.01
10/14	221	1.10	812	3	0.740	6.6	0.84	4.0
10/16	160	0.54	892	4	0.730	6.6	0.55	4.0
10/19	175	0.5	1060	4	0.730	6.4	0.50	4.0
10/21	171	1.1	1050	2	0.731	6.0	0.46	4.0
10/23	91.5	0.65	1032	13	0.677	6.0	0.25	3.99
10/26	131	0.90	976	2	0.75	6.6	0.29	4.0
10/28	132	0.87	1136	8	0.658	6.4	0.35	3.99
10/30	135	0.57	1036	6	0.715	6.3	0.385	4.06
11/2	189.2	1.02	956	4	0.660	6.5	0.604	4.0
11/4	238	2.0	884	6	0.720	6.0	0.758	4.0
11/6	163.5	0.77	960	3	0.610	6.2	0.495	4.02
11/9	197.5	2.35	732	4	0.720	6.2	0.785	4.0
11/11	186.7	1.62	628	0	0.760	6.3	0.878	4.0
11/13	190.5	1.30	560	1	0.750	6.6	1.053	4.02
11/16	149.8	0.97	808	0	0.77	6.1	0.53	3.99
11/18	255	1.40	812	6	0.68	6.2	0.914	4.0
11/20	154	0.81	784	3	0.74	6.3	0.581	3.99
11/23	260	1.65	702	0	0.765	6.5	1.13	4.0
11/25	160	1.22	808	1	0.750	6.0	0.56	3.99
N	24	24	24	24	24	24	24	24
$\bar{x}$	179.6	1.094	861.8	3.8	0.72	6.3	0.645	3.97
σ	40.85	0.486	151.7	3.4	0.52	0.20	0.240	0.16
C.V.%	22.74	44.42	17.60	89.47	7.22	3.17	37.3	4.03

TABLE A-230. BOD_5 DATA FOR 6 DAY TOLUENE UNIT

Chemical Compound: Toluene — θ_c = 6 days

Parameter: BOD_5 — Volume of Reactor = 3.255 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
10/2 /81	217.8	1.7	1164	17	0.400	6.3	0.52	6.0
10/5	165.6	1.06	1052	0	0.481	6.3	0.44	5.99
10/7	157.4	1.1	1000	2	0.472	6.0	0.42	5.99
10/9	195.7	0.38	1108	2	0.528	6.4	0.50	6.0
10/12	212.5	1.25	936	8	0.480	6.40	0.64	6.0
10/14	221	0.90	1116	2	0.530	6.20	0.54	6.0
10/16	160	0.59	1124	3	0.525	6.80	0.43	6.0
10/19	115	0.75	1144	3	0.525	6.2	0.42	6.0
10/21	171	0.82	1348	3	0.526	6.2	0.38	5.99
10/23	91.5	0.32	1208	13	0.464	6.0	0.20	6.0
10/26	131	0.90	1376	2	0.530	6.30	0.265	6.0
10/28	132	1.32	1548	0	0.395	6.30	0.237	5.99
10/30	135	0.6	1448	3	0.525	6.20	0.255	6.02
11/2	189.2	0.768	1516	6	0.500	5.9	0.326	6.0
11/4	238	1.9	1217	0	0.540	5.9	0.510	6.0
11/6	163.5	0.48	968	0	0.430	6.4	0.478	5.95
11/9	197.5	1.50	1048	3	0.520	6.30	0.525	6.0
11/11	186.7	1.23	1100	0	0.530	6.40	0.480	6.0
11/13	190.5	1.48	876	1	0.535	6.30	0.606	6.0
11/16	149.8	1.03	1048	0	0.540	6.0	0.379	6.03
11/18	255	1.0	1048	7	0.480	6.3	0.678	6.0
11/20	154	1.04	996	1	0.530	6.3	0.431	5.97
11/23	260	1.53	1224	1	0.535	6.7	0.63	6.0
11/25	160	0.57	1004	2	0.530	5.8	0.41	5.99
N	24	24	24	24	24	24	24	24
$\bar{x}$	179.6	1.00	1150.7	3.29	0.502	6.24	0.446	6.0
σ	40.85	0.426	181.0	4.25	0.04	0.234	0.128	0.015
C.V.%	22.75	42.60	15.73	129.18	7.97	3.75	28.85	0.25

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TABLE A-231. TOC DATA FOR 2 DAY TOLUENE UNIT

Chemical Compound: Toluene

θ_c = 2 days

Parameter: TOC

Volume of Reactor = 3.129 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
10/2/81	149	17	560	2	1.540	6.3	0.77	2.0
10/5	120	10.5	592	1	1.399	6.2	0.58	2.0
10/7	178	20.5	644	0	1.501	6.4	0.81	2.02
10/9	132	14	536	2	1.524	6.6	0.75	1.99
10/12	109	12	380	8	1.435	6.3	0.84	2.0
10/14	143	6	588	5	1.500	6.30	0.71	2.0
10/16	150	7	304	2	1.530	6.40	1.45	2.0
10/19	135	9	682	3	1.530	6.4	0.58	2.0
10/21	103	8.6	504	6	1.519	6.2	0.58	1.99
10/23	128	14	492	17	1.369	5.8	0.70	1.99
10/26	106	13.12	528	4	1.500	6.10	0.56	2.0
10/28	97	15	548	0	1.473	6.40	0.52	1.99
10/30	71	6.87	580	5	1.500	6.20	0.35	2.0
11/2	136	7.5	664	3	1.460	5.9	0.56	1.99
11/4	106	14	520	2	1.500	6.0	0.56	2.05
11/6	80	14	796	0	1.340	6.4	0.30	1.99
11/9	171	8.2	568	5	1.500	5.9	0.821	2.0
11/11	145	17.5	584	1	1.540	6.60	0.754	2.0
11/13	111	20.6	484	1	1.500	6.30	0.665	2.06
11/16	139	16	528	0	1.560	6.0	0.78	2.0
11/18	141	14.1	426	6	1.44	6.2	0.95	2.0
11/20	156	17	432	3	1.51	6.0	0.99	1.99
11/23	143	6	448	0	1.56	6.3	0.925	2.0
11/25	148	6.0	500	4	1.49	6.4	0.872	2.0
N	24	24	24	24	24	24	24	24
$\bar{x}$	129.2	12.3	537	3.3	1.488	6.23	0.724	2.002
σ	26.7	4.61	103.2	3.68	0.057	0.21	0.234	0.017
C.V.%	20.66	37.48	19.22	111.5	3.83	3.37	32.2	8.49

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TABLE A-232. TOC DATA FOR 4 DAY TOLUENE UNIT

Chemical Compound: Toluene θ_c = 4 days

Parameter: TOC Volume of Reactor = 3.069 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
10/2/81	149	33	628	2	0.750	6.3	0.70	4.0
10/5	120.5	6	980	1	0.661	6.3	0.36	3.87
10/7	178	18	764	0	0.868	6.3	0.69	3.23
10/9	132	10	884	10	0.670	6.3	0.44	4.02
10/12	109.5	13	800	8	0.685	6.4	0.41	4.01
10/14	143	11	812	3	0.740	6.6	0.54	4.0
10/16	150	12	892	4	0.730	6.6	0.52	4.0
10/19	135	8	1060	4	0.730	6.4	0.38	4.0
10/21	103	7	1050	2	0.731	6.0	0.28	4.0
10/23	128.5	12	1032	13	0.677	6.0	0.35	3.99
10/26	106.3	10	976	2	0.750	6.6	0.27	4.0
10/28	97.5	20	1136	8	0.658	6.4	0.21	3.99
10/30	71.3	10	1036	6	0.715	6.3	0.16	4.06
11/2	136.3	10	956	4	0.660	6.5	0.348	4.0
11/4	106.3	21	884	6	0.720	6.0	0.271	4.0
11/6	80	5	960	3	0.610	6.2	0.194	4.02
11/9	171.8	9	732	4	0.720	6.2	0.683	4.0
11/11	145	11	628	0	0.760	6.3	0.682	4.0
11/13	111	18	560	1	0.750	6.6	0.614	4.02
11/16	139	13	808	0	0.77	6.1	0.49	3.99
11/18	141.4	18	812	6	0.68	6.2	0.51	4.0
11/20	156	14	784	3	0.74	6.3	0.59	3.99
11/23	143	8	702	0	0.765	6.5	0.621	4.0
11/25	148	8	808	1	0.750	6.0	0.515	3.99
N	24	24	24	24	24	24	24	24
$\bar{x}$	129.2	12.8	861.8	3.8	.72	6.3	0.45	3.97
σ	26.7	6.14	151.7	3.4	.052	0.20	0.17	0.17
C.V.%	20.66	47.97	17.60	89.47	7.22	3.17	37.6	4.03

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TABLE A-233. TOC DATA FOR 6 DAY TOLUENE UNIT

Chemical Compound: Toluene θ_c = 6 days

Parameter: TOC Volume of Reactor = 3.255 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
10/2/81	149	12	1164	17	0.400	6.3	0.36	6.0
10/5	120.5	3	1052	0	0.481	6.3	0.33	5.99
10/7	178	15	1000	2	0.472	6.0	0.47	5.99
10/9	132	4	1108	2	0.528	6.4	0.34	6.00
10/12	109.5	8.5	936	8	0.480	6.4	0.33	6.0
10/14	143	10	1116	2	0.530	6.2	0.35	6.0
10/16	150	5	1124	3	0.525	6.8	0.40	6.0
10/19	135	4	1144	3	0.525	6.2	0.32	6.0
10/21	103	7.8	1348	3	0.526	6.2	0.21	6.0
10/23	128.5	15	1208	13	0.464	6.0	0.28	6.0
10/26	106.3	14.9	1376	2	0.530	6.3	0.172	6.0
10/28	97.5	23.8	1548	0	0.395	6.3	0.123	5.99
10/30	71.3	13.1	1448	3	0.525	6.2	0.10	6.02
11/2	136.3	8.75	1516	6	0.500	5.9	0.23	6.0
11/4	106.3	20	1217	0	0.540	5.9	0.23	6.0
11/6	80	13.8	968	0	0.430	6.4	0.23	5.95
11/9	171.8	9.75	1048	3	0.520	6.3	0.485	6.0
11/11	145	11.3	1100	0	0.530	6.4	0.373	6.0
11/13	111	20.6	876	1	0.535	6.3	0.353	6.0
11/16	139	13	1048	0	0.54	6.0	0.35	6.03
11/18	141.4	15.6	1048	7	0.48	6.3	0.38	6.0
11/20	156	12	996	1	0.53	6.3	0.44	5.97
11/23	143	6.6	1224	1	0.535	6.7	0.346	6.0
11/25	148	6.6	1004	2	0.53	5.8	0.378	5.99
N	24	24	24	24	24	24	24	24
$\bar{x}$	129.2	11.4	1150.7	3.29	.502	6.24	0.315	6.0
σ	26.7	5.44	181.0	4.25	.04	0.234	0.10	0.015
C.V.%	20.67	47.72	15.73	129.2	7.97	3.75	31.9	0.25

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TABLE A-234. COD DATA FOR 2 DAY TOLUENE UNIT

Chemical Compound: Toluene

θ_c = 2 days

Parameter: COD

Volume of Reactor = 3.129 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
10/2/81	500	23	560	2	1.540	6.3	2.59	2.0
10/9	430	31	536	2	1.524	6.6	2.45	1.99
10/23	425	20	492	17	1.369	5.8	2.31	1.99
10/30	360	25	580	5	1.500	6.2	1.77	2.0
11/2	410	16	796	0	1.340	6.4	1.517	1.99
11/13	330	24	484	1	1.500	6.30	1.97	2.06
11/20	430	16	432	3	1.51	6.0	2.75	1.99
11/25	380	12	500	4	1.49	6.4	2.24	2.0
N	8	8	8	8	8	8	8	8
$\bar{x}$	408.1	20.9	547.5	4.25	1.472	6.25	2.2	2.0
σ	52.0	6.1	110.7	5.39	0.074	0.251	0.42	0.024
C.V.%	12.74	29.19	20.22	126.8	5.03	4.02	19.09	1.20

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TABLE A-235. COD DATA FOR 4 DAY TOLUENE UNIT

Chemical Compound: Toluene

θ_c = 4 days

Parameter: COD

Volume of Reactor = 3.069 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
10/2	500	27	628	2	0.750	6.3	2.35	4.0
10/9	430	12	884	10	0.670	6.3	1.44	4.02
10/16	480	22	892	4	0.730	6.60	1.67	4.0
10/23	425	8	1032	13	0.677	6.0	1.16	3.99
10/30	360	18	1036	6	0.715	6.3	1.67	4.06
11/6	410	35	960	3	0.610	6.2	1.242	4.02
11/13	330	14	560	1	0.750	6.6	1.82	4.02
11/20	430	52	784	3	0.740	6.3	1.62	3.99
11/25	380	14	808	1	0.75	6.0	1.32	3.99
N	9	9	9	9	9	9	9	9
$\bar{x}$	416.1	22.4	798.2	4.78	.710	6.28	1.59	4.01
σ	54.2	13.8	161.7	4.18	.0485	0.214	0.361	0.023
C.V.%	13.03	61.61	20.23	87.45	6.83	3.41	22.74	0.57

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TABLE A-236. COD DATA FOR 6 DAY TOLUENE UNIT

Chemical Compound: Toluene — θ_c = 6 days

Parameter: COD — Volume of Reactor = 3.255 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
10/2	500	20	1164	17	0.400	6.3	1.20	6.0
10/9	430	45	1108	2	0.528	6.4	1.10	6.0
10/16	480	6	1124	3	0.525	6.8	1.28	6.0
10/23	425	15	1208	13	0.464	6.0	0.93	6.0
10/30	360	28	1448	3	0.525	6.20	0.68	6.02
11/6	410	38	968	0	0.430	6.4	1.199	5.95
11/13	330	15	876	1	0.535	6.3	1.05	6.0
11/20	430	18	996	1	0.53	6.3	1.20	5.97
11/25	380	17	1004	2	0.53	5.8	0.97	5.99
N	9	9	9	9	9	9	9	9
$\bar{x}$	416.1	22.4	1099	4.67	0.496	6.27	1.07	6.0
σ	54.2	12.34	167.7	6.02	0.0514	0.277	0.186	0.02
C.V.%	13.03	55.09	15.26	128.91	10.36	4.42	17.41	0.33

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TABLE A-237. BOD$_5$ DATA FOR 2 DAY ETHYL BENZENE UNIT

Chemical Compound: Ethyl Benzene

Parameter: BOD$_5$

θ_c = 2 days

Volume of Reactor = 3.14 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
10/2/81	228	1.75	1010	26	1364	6.5	0.672	2.0
10/5	220	3.0	665	62	784	6.4	0.970	2.0
10/16	202	0.93	368	112	224	6.5	1.63	2.14
10/19	280	2.98	760	52	1000	6.5	1.098	2.0
10/21	222	0.86	404	72	0	6.5	1.63	1.85
10/23	162	0.53	524	0	1570	6.5	0.921	2.0
10/26	160	3.2	764	0	1570	6.5	0.624	2.0
10/28	241	0.14	780	44	1083	6.5	0.921	1.96
10/30	210	0.6	632	38	1032	6.4	0.975	2.06
11/6	274	2.5	364	42	554	6.5	2.24	2.0
11/9	205	1.15	636	4	1520	6.4	0.946	2.0
11/16	252	2.6	544	12	1400	6.4	1.360	2.0
11/18	231	0.4	460	0	1570	6.4	1.361	2.0
11/20	221	1.0	636	0	1570	6.5	1.036	2.0
11/22	293	1.5	640	0	1570	6.2	1.302	2.0
11/23	269	0.81	665	0	1570	6.3	1.169	2.0
11/25	214	0.95	887	0	1570	6.5	0.719	2.0
N	17	17	17	17	17	17	17	17
$\bar{x}$	228.47	1.46	631.76	27.29	1173.59	6.44	1.15	2.001
σ	37.36	1.008	178.22	33.16	511.16	0.087	0.4091	0.054
C.V.%	16.35	68.86	28.21	121.49	43.55	1.35	35.53	2.72

TABLE A-238. BOD_5 DATA FOR 4 DAY ETHYL BENZENE UNIT

Chemical Compound: Ethyl Benzene θ_c = 4 days

Parameter: BOD_5 Volume of Reactor = 3.04 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
10/2	228	1.06	1690	56	475	6.3	0.409	4.0
10/5	220	1.14	1662	38	565	6.3	0.395	4.0
10/12	231	0.6	1544	0	760	6.3	0.446	4.0
10/14	229	2.41	1464	44	537	6.3	0.466	4.0
10/16	202	0.45	1184	108	297	6.3	0.509	3.72
10/19	280	1.85	1288	60	360	6.2	0.638	4.0
10/21	222	1.17	956	50	8	6.3	0.692	3.81
10/30	210	0.5	976	52	269	6.3	0.640	0.640
11/2	254	2.3	832	20	555	6.3	0.911	4.0
11/4	244	1.85	976	0	741	6.3	0.746	4.0
11/6	274	1.2	940	48	313	6.3	0.869	4.0
11/9	205	0.75	1176	28	557	6.3	0.590	4.0
11/11	220	1.33	1068	76	123	6.3	0.615	4.0
11/20	221	2.6	312	0	760	6.3	2.114	4.0
11/22	293	3.4	408	0	760	6.1	2.009	4.0
11/23	269	0.81	592	0	760	6.2	1.292	4.0
11/25	214	2.07	802	0	760	6.3	.771	4.0
N	17	17	17	17	17	17	17	17
$\bar{x}$	236.24	1.4994	969.41	34.12	505.88	6.28	0.822	3.979
σ	27.89	0.8426	436.33	32.07	242.55	0.056	0.5166	0.0872
C.V.%	11.81	56.19	45.01	94.01	47.95	0.8958	62.84	2.19

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TABLE A-239. BOD_5 DATA FOR 6 DAY ETHYL BENZENE UNIT

Chemical Compound: Ethyl Benzene

θ_c = 6 days

Parameter: BOD_5

Volume of Reactor = 3.16 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
10/5	220	1.8	1394	88	0	6.6	0.474	5.26
10/9	183	0.42	1140	38	217	6.6	0.482	6.0
10/12	231	0.52	1112	0	520	6.4	0.605	6.0
10/14	229	1.4	1632	74	103	6.5	0.415	6.0
10/21	222	1.57	932	68	0	6.6	0.716	5.34
11/18	231	3.3	484	6	414	6.6	1.435	6.0
11/20	221	2.8	556	0	526	6.7	1.814	6.0
11/22	293	2.74	728	0	526	6.4	1.174	6.0
11/23	269	1.44	755	0	526	6.4	1.034	6.0
N	9	9	9	9	9	9	9	9
$\bar{x}$	233.2	1.777	970.33	30.44	314.67	6.533	0.91	5.733
σ	31.33	1.001	384.2	37.05	234.09	0.1118	0.49	1.633
C.V.%	13.43	56.33	39.59	121.7	74.39	1.71	53.8	28.49

TABLE A-240. TOC DATA FOR 2 DAY ETHYL BENZENE UNIT

Chemical Compound: Ethyl Benzene θ_c = 2 days

Parameter: TOC Volume of Reactor = 3.14 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
10/5	161.5	16	665	62	784	6.4	0.712	2.0
10/16	173	4	368	112	224	6.5	1.401	2.14
10/19	164	7	760	52	1000	6.5	0.643	2.0
10/21	131.1	11.1	404	72	0	6.5	0.967	1.85
10/23	162	14.5	524	0	1570	6.5	0.921	2.0
10/26	149	13.1	764	0	1570	6.5	0.580	2.0
10/28	142.5	10	780	44	1083	6.5	0.544	1.96
10/30	117	9	632	38	1032	6.4	0.543	2.06
11/6	112.5	16.2	364	42	554	6.5	0.981	2.0
11/9	139.5	10.8	636	4	1520	6.4	0.644	2.0
11/16	131	16	544	12	1400	6.4	0.707	2.0
11/18	189.5	15.7	460	0	1570	6.4	1.209	2.0
11/22	120.2	9.8	640	0	1570	6.2	0.534	2.0
11/23	176.5	9.5	665	0	1570	6.3	0.767	2.0
11/24	113.5	12.2	612	34	1111	6.5	0.553	2.0
11/25	173	18	887	0	1570	6.5	0.581	2.0
N	16	16	16	16	16	16	16	16
$\bar{x}$	147.24	12.06	606.6	29.5	1133	6.44	0.764	2.001
σ	24.86	3.85	153.96	33.46	514.1	0.088	0.257	0.056
C.V.%	16.89	31.94	25.38	113.5	45.38	1.38	33.64	2.81

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TABLE A-241. TOC DATA FOR 4 DAY ETHYL BENZENE UNIT

Chemical Compound: Ethyl Benzene

Parameter: TOC

θ_c = 4 days

Volume of Reactor = 3.04 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
10/9	160	17	1540	14	541	6.3	0.310	4.0
10/12	131.5	13	1544	0	760	6.3	0.253	4.0
10/16	173	5	1184	108	297	6.3	0.436	3.72
10/19	164	12	1288	60	360	6.2	0.373	4.0
10/21	131.1	11.1	956	50	8	6.3	0.409	3.81
10/30	117	10.3	976	52	269	6.3	0.358	4.12
11/2	148.7	8.7	832	20	555	6.3	0.533	4.0
11/6	112.5	13.7	940	48	313	6.3	0.357	4.0
11/9	139.5	7.7	1176	28	557	6.3	0.354	4.0
11/11	171.5	13.5	1068	76	123	6.3	0.479	4.0
11/22	120.2	15.3	408	0	760	6.1	0.851	4.0
11/23	176.5	11.5	592	0	760	6.2	0.876	4.0
11/24	113.5	13.60	488	6	658	6.2	0.683	4.0
N	13	13	13	13	13	13	13	13
$\bar{x}$	143	11.72	999.4	35.53	458.54	6.26	0.482	3.973
σ	23.9	3.24	359.8	33.6	249.5	0.065	0.2	0.099
C.V.%	16.74	27.6	36	94.54	54.4	1.004	41.59	2.51

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TABLE A-242. TOC DATA FOR 6 DAY ETHYL BENZENE UNIT

Chemical Compound: Ethyl Benzene θ_c = 6 days

Parameter: TOC Volume of Reactor = 3.16 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
10/9	160	5	1140	38	217	6.6	0.422	6.0
10/12	131.5	14	1112	0	526	6.4	0.343	6.0
10/21	131.5	9.1	932	68	0	6.6	0.423	5.34
10/23	162	16	756	84	0	6.6	0.644	2.99
11/18	189.5	23.7	48.4	6	414	6.6	0.178	6.0
11/20	169	21	55.6	0	526	6.7	0.928	6.0
11/22	120.2	13.8	728	0	526	6.4	0.482	6.0
11/23	176.5	11.5	755	0	526	6.4	0.682	6.0
11/24	113.5	14.3	752	38	56	6.6	0.454	6.0
N	8	8	8	8	8	8	8	8
$\bar{x}$	148.9	14.05	690.4	18.75	348.87	6.525	0.614	5.793
σ	28.37	6.029	427.7	26.01	225.1	0.1164	0.295	0.395
C.V.%	19.05	42.91	61.52	138.71	64.51	1.785	48.12	6.816

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TABLE A-243. COD DATA FOR 2 DAY ETHYL BENZENE UNIT

Chemical Compound: Ethyl Benzene θ_c = 2 days

Parameter: COD   Volume of Reactor = 3.14 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
10/16	480	37	368	112	224	6.5	3.88	2.14
10/23	500	32	524	0	1570	6.5	2.84	2.0
10/30	525	40	632	38	1032	6.4	2.43	2.06
11/6	475	45	364	42	554	6.5	3.890	2.0
11/20	570	39	636	0	1570	6.5	2.672	2.0
11/25	550	15	887	0	1570	6.5	1.849	2.0
N	6	6	6	6	6	6	6	6
$\bar{x}$	516.67	34.67	568.5	32	1086.67	6.48	2.9268	2.03
σ	38.43	10.52	196.99	43.89	588.52	0.0408	0.8145	0.0575
C.V.%	7.438	30.35	34.65	136.99	54.16	0.6296	27.83	2.828

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TABLE A-244. COD DATA FOR 4 DAY ETHYL BENZENE UNIT

Chemical Compound: Ethyl Benzene θ_c = 4 days

Parameter: COD Volume of Reactor = 3.04 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	FW l/day	F ml/min	F/M	θ_c days
10/16	480	38	1184	108	297	6.3	1.21	4.0
10/30	525	45	976	52	269	6.3	1.60	4.12
11/6	475	49	940	48	313	6.3	2.893	4.0
11/20	570	37	312	0	760	6.3	5.452	4.0
11/25	550	14	802	0	760	6.3	2.046	4.0
N	5	5	5	5	5	5	5	5
$\bar{x}$	520	36.6	842.8	41.6	479.8	6.3	2.64	4.02
σ	41.98	13.575	326.73	44.78	256.27	0	1.6919	0.054
C.V.%	8.07	37.69	38.76	107.6	53.41	0	64.08	1.33

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TABLE A-245. COD DATA FOR 6 DAY ETHYL BENZENE UNIT

Chemical Compound: Ethyl Benzene θ_c = 6 days

Parameter: COD Volume of Reactor = 3.16 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
10/9	525	29	1140	38	217	6.6	1.38	6.0
11/20	570	43	556	0	526	6.7	3.13	6.0
N	2	2	2	2	2	2	2	2
$\bar{x}$	547.5	36	846	19	371.5	6.65	2.255	6
σ	31.819	9.899	412.95	26.87	218.5	0.071	1.237	0
C.V.%	5.81	27.49	48.69	141.4	58.8	1.063	54.88	0

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TABLE A-246. BOD_5 DATA FOR 2 DAY PHENANTHRENE UNIT

Chemical Compound: Phenanthrene θ_c = 2 days

Parameter: BOD_5 Volume of Reactor = 3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
10/2/81	270	8.9	1440	10	1.45	6.2	0.549	2.031
10/5	278	1.65	1220	2	1.51	6.2	0.667	2.004
10/7	314	5.7	920	16	1.4	6.1	0.984	1.995
10/9	285	1.5	1020	2	1.52	6.2	0.818	1.9877
10/12	279	1.9	1010	2	1.5	6.1	0.796	2.0139
10/14	294	2.1	880	2	1.49	6.2	0.978	2.0241
10/16	276	1.3	970	2	1.52	6.1	0.820	1.9870
10/19	273	2.3	1020	2	1.47	6.2	0.778	2.0545
10/21	279	0.9	1048	2	1.50	6.2	0.778	2.0149
10/23	334	2.0	1048	4	1.48	6.1	0.918	2.0227
10/26	250	4.1	1444	12	1.46	6.0	0.490	2.0070
10/28	220	3.4	1268	6	1.48	6.2	0.507	2.0129
10/30	230	3.2	1248	6	1.48	6.1	0.531	2.0130
11/2	300	1.1	1120	4	1.48	6.1	0.7719	2.0251
11/4	352	1.5	1300	4	1.47	6.1	0.7803	2.0435
11/6	234	0.8	1230	5	1.56	6.1	0.5483	1.919
11/9	264	0.7	1110	2	1.50	6.2	0.696	2.015
11/11	249	0.54	1200	6	1.49	6.1	0.598	1.998
11/13	272	1.4	1180	2	1.51	6.1	0.664	2.004
11/16	267	1.3	1090	16	1.40	6.2	0.717	2.019
11/18	224	1.0	1060	6	1.45	6.2	0.619	2.044
11/20	235	0.6	1090	8	1.45	6.3	0.641	2.0253
11/23	244	0.7	1040	8	1.40	6.2	0.687	2.092
11/25	246	1.05	1090	4	1.40	6.1	0.650	2.1372
N	24	24	24	24	24	24	24	24
$\bar{x}$	270	2.07	1127	5	1.47	6.15	0.708	1.979
σ	33.4	1.91	144.93	4.34	0.042	0.066	0.139	0.182
C.V.%	12.4	92.3	12.9	86.9	2.48	1.07	19.7	9.19

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TABLE A-247. BOD$_5$ DATA FOR 4 DAY PHENANTHRENE UNIT

Chemical Compound: Phenanthrene

Parameter: BOD$_5$

θ_c = 4 days

Volume of Reactor = 3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
10/2/81	270	1.2	1370	10	0.70	6.1	0.5680	4.0178
10/5	278	1.4	1300	10	0.70	6.1	0.6163	4.001
10/7	314	7.9	1100	20	0.60	6.0	0.8087	4.0915
10/9	285	2.1	1180	14	0.66	6.2	0.6960	4.0250
10/12	279	2.2	1120	20	0.61	6.2	0.7179	4.0236
10/14	294	1.85	1490	2	0.74	6.2	0.5686	4.0615
10/16	276	1.9	1525	4	0.73	6.1	0.5216	4.0603
10/19	273	1.6	1328	8	0.72	6.3	0.6118	4.0112
10/21	279	0.8	1412	12	0.71	6.0	0.5598	4.0261
10/23	334	2.7	1092	16	0.64	6.1	0.8814	4.0155
11/2	300	6.9	1100	8	0.70	6.1	0.7860	4.0195
11/4	352	3.1	1085	2	0.73	6.1	0.9345	4.0948
11/6	234	1.2	1110	4	0.74	6.1	0.6075	4.0183
11/9	264	6.2	1230	8	0.71	6.1	0.619	3.990
11/11	249	2.0	1310	8	0.70	6.1	0.548	4.060
11/13	272	2.5	1300	2	0.75	6.1	0.603	4.000
11/16	267	1.6	1100	12	0.67	6.1	0.6995	4.021
11/18	224	1.2	1030	12	0.66	6.2	0.637	4.0327
11/20	235	0.6	1050	6	0.70	6.1	0.645	4.0874
11/23	244	0.74	1120	11	0.68	6.3	0.648	4.0004
11/25	246	1.22	1140	9	0.69	6.1	0.622	4.0456
N	21	21	21	21	21	21	21	21
$\bar{x}$	275	2.42	1214	9.429	0.63	6.13	0.662	4.0365
σ	32.12	2.04	148.34	5.269	0.167	0.078	0.110	0.042
C.V.%	11.7	84.3	12.2	55.87	26.5	1.28	16.6	1.04

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TABLE A-248. BOD$_5$ DATA FOR 6 DAY PHENANTHRENE UNIT

Chemical Compound: Phenanthrene θ_c = 6 days

Parameter: BOD5 Volume of Reactor = 2.97 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
10/2	270	2.0	1350	36	0.25	6.1	0.5917	6.2189
10/5	278	1.1	1700	2	0.49	6.1	0.4838	5.9429
10/7	314	7.8	1380	8	0.44	6.1	0.6732	6.0814
10/9	285	1.4	1210	50	0.135	6.3	0.7194	5.8893
11/2	300	2.7	1220	8	0.45	6.2	0.7384	6.1146
11/4	352	2.6	1330	6	0.46	6.3	0.8094	5.9537
11/6	234	0.8	1260	6	0.46	6.2	0.5577	5.9362
11/9	264	1.0	1430	10	0.425	6.2	0.5550	6.130
11/11	249	0.9	1460	6	0.435	6.2	0.5127	6.320
11/13	272	1.6	1480	4	0.460	6.2	0.5525	6.150
11/16	267	2.8	1190	27	0.30	6.1	0.6638	6.0305
11/18	224	2.3	1130	12	0.40	6.1	0.586	6.0732
11/20	235	0.9	1210	21	0.34	6.2	0.5838	6.073
11/23	244	0.6	1200	16	0.38	6.1	0.6016	6.0359
11/25	246	1.7	1310	20	0.36	6.2	0.5645	6.0512
N	15	15	15	15	15	15	15	15
$\bar{x}$	268.93	2.02	1324	15.47	0.386	6.17	0.6151	6.0667
σ	34.03	1.76	149.13	13.45	0.096	0.072	0.0887	0.1134
C.V.%	12.65	87.01	11.26	86.96	24.97	1.17	14.42	1.87

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TABLE A-249. TOC DATA FOR 2 DAY PHENANTHRENE UNIT

Chemical Compound: Phenanthrene

θ_c = 2 days

Parameter: TOC

Volume of Reactor = 3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
10/2	194	43.5	1440	10	1.45	6.2	0.3944	2.0310
10/5	191	13.5	1220	2	1.51	6.2	0.4583	2.004
10/7	208.5	24.7	920	16	1.4	6.1	0.6531	1.9950
10/9	172	12	1020	2	1.52	6.2	0.4936	1.9877
10/12	169	15	1010	2	1.5	6.1	0.4822	2.0139
10/14	180	15	880	2	1.49	6.2	0.5988	2.0241
10/16	187	15	970	2	1.52	6.1	0.5556	1.9870
10/19	1565	15	1026	2	1.47	6.2	0.4465	2.0545
10/21	124.2	13.6	1084	2	1.5	6.2	0.3354	2.0149
10/23	184.5	28	1048	4	1.48	6.1	0.5073	2.0227
10/26	153	25	1444	12	1.46	6.0	0.3002	2.0070
10/28	174	25	1268	6	1.48	6.2	0.4017	2.0129
10/30	134.5	11.6	1248	6	1.48	6.1	0.3106	2.0130
11/2	163.7	7.5	1120	4	1.48	6.1	0.4212	2.0251
11/4	162.5	18.7	1300	4	1.47	6.1	0.3602	2.0435
11/6	113.7	15	1230	5	1.56	6.1	0.2664	1.919
11/9	152.2	9.31	1110	2	1.50	6.2	0.4009	2.010
11/11	180.5	30.5	1200	6	1.49	6.1	0.4335	1.990
11/13	162	15.5	1180	2	1.51	6.1	0.3956	2.000
11/16	119	15	1090	16	1.40	6.2	0.3192	2.019
11/18	183.9	13.6	1060	6	1.45	6.2	0.5073	2.044
11/20	168	11	1090	8	1.45	6.3	0.4584	2.0253
11/23	146.5	9.0	1040	8	1.40	6.2	0.4119	2.0920
11/25	167.5	19	1090	4	1.40	6.1	0.4429	2.1372
N	24	24	24	24	24	24	24	24
$\bar{x}$	164.49	17.54	1128.67	5.54	1.474	6.15	0.4315	2.0197
σ	24.08	8.23	144.26	4.253	0.042	0.066	0.094	0.0398
C.V.%	14.64	46.92	12.78	76.76	2.86	1.07	21.79	1.97

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TABLE A-250. TOC DATA FOR 4 DAY PHENANTHRENE UNIT

Chemical Compound: Phenanthrene θ_c = 4 days

Parameter: TOC Volume of Reactor = 3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
10/2	194	36.5	1370	10	0.7	6.1	0.4081	4.0178
10/5	191	10	1300	10	0.7	6.1	0.4234	4.001
10/7	208	23.7	1100	20	0.6	6.0	0.5370	4.0915
10/9	172	13	1180	14	0.66	6.2	0.4267	4.025
10/12	169	19	1120	20	0.61	6.2	0.4417	4.0236
10/14	180	15	1490	2	0.74	6.2	0.3536	4.0615
10/16	187	14	1525	4	0.73	6.1	0.3534	4.0603
10/19	156	10	1328	8	0.71	6.3	0.3505	4.0112
10/21	124	10.3	1412	12	0.69	6.0	0.2492	4.0261
10/23	184	24	1092	16	0.64	6.1	0.4869	4.0155
11/2	163	10	1100	8	0.7	6.1	0.4289	4.0195
11/4	162	26.2	1085	2	0.73	6.1	0.4316	4.0948
11/6	113	12.5	1110	4	0.73	6.1	0.2952	4.0183
11/9	152	16.67	1230	8	0.71	6.1	0.3566	3.990
11/11	180	37	1310	8	0.71	6.1	0.3971	4.060
11/13	162	22	1300	2	0.75	6.1	0.3591	4.000
11/16	119	17	1100	12	0.67	6.1	0.3118	4.0210
11/18	183	20	1030	12	0.66	6.2	0.5220	4.0327
11/20	168	14	1050	6	0.70	6.1	0.4611	4.0874
11/23	146	11.5	1120	11	0.68	6.3	0.3891	4.0004
11/25	167	25.5	1140	9	0.69	6.1	0.4234	4.0456
N	21	21	21	21	21	21	21	21
$\bar{x}$	166.01	18.47	1166.29	9.429	0.62	6.13	0.4003	4.0365
σ	24.66	8.075	282.87	5.269	0.17	0.078	0.0715	0.0422
C.V.%	14.855	43.72	24.25	55.87	27.77	1.28	17.87	1.05

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TABLE A-251. TOC DATA FOR 6 DAY PHENANTHRENE UNIT

Chemical Compound: Phenanthrene θ_c = 6 days

Parameter: TOC Volume of Reactor = 2.97 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
10/2	194	33	1350	36	0.25	6.1	0.4252	6.2189
10/5	191	9.5	1700	2	0.49	6.1	0.3324	5.9429
10/7	208	24.3	1380	8	0.44	6.1	0.4470	6.0814
10/9	172	14	1210	50	0.13	6.3	0.4342	5.8893
11/2	163	8.7	1220	8	0.43	6.2	0.4034	6.1146
11/4	162	21.2	1330	6	0.46	6.3	0.3732	5.9537
11/6	113	7.5	1260	6	0.46	6.2	0.2713	5.9362
11/9	152	7.0	1430	10	0.42	6.2	0.3196	6.130
11/11	180	30.5	1460	6	0.43	6.2	0.3713	6.320
11/13	162	21.5	1480	4	0.46	6.2	0.3287	6.150
11/16	119	18	1190	27	0.30	6.1	0.2882	6.0305
11/18	183	14.6	1130	12	0.40	6.1	0.4690	6.0732
11/20	168	15	1210	21	0.34	6.2	0.4169	6.0730
11/23	146	8.5	1200	16	0.38	6.1	0.3518	6.0359
11/25	167	19.5	1310	20	0.36	6.2	0.3840	6.0512
N	15	15	15	15	15	15	15	15
$\bar{x}$	165.67	16.85	1324	15.47	0.384	6.17	0.3744	6.0667
σ	25.82	8.21	149.13	13.45	0.096	0.0704	0.0589	0.1134
C.V.%	15.59	48.7	11.26	86.96	24.89	1.14	15.73	1.869

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TABLE A-252. COD DATA FOR 2 DAY PHENANTHRENE UNIT

Chemical Compound: Phenanthrene θ_c = 2 days

Parameter: COD Volume of Reactor = 3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
10/2	670	36	1440	10	1.45	6.2	1.3621	2.031
10/9	520	58	1020	2	1.52	6.2	1.4924	1.988
10/16	500	26	970	2	1.52	6.1	1.4855	1.987
10/23	500	22	1048	4	1.48	6.1	1.3749	2.0227
10/30	500	65	1248	6	1.48	6.1	1.1546	2.0130
11/6	440	29	1230	5	1.56	6.1	1.0309	1.919
11/13	445	25	1180	2	1.51	6.1	1.0886	2.000
11/20	480	13	1090	8	1.45	6.3	1.4326	2.0253
11/25	525	12	1090	4	1.4	6.1	1.3880	2.1372
N	9	9	9	9	9	9	9	9
$\bar{x}$	509	32	1146	4.8	1.49	6.1	1.3122	2.0137
σ	67.3	18.5	144.8	2.8	0.048	0.073	0.174	0.057
C.V.%	13.2	57.8	12.6	58.7	3.2	1.19	13.3	2.84

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TABLE A-253. COD DATA FOR 4 DAY PHENANTHRENE UNIT

Chemical Compound: Phenanthrene

Parameter: COD

θ_c = 4 days

Volume of Reactor = 3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
10/2	670	13	1370	10	0.7	6.1	1.4094	4.018
10/9	520	19	1180	44	0.42	6.2	1.2900	4.138
10/16	500	25	1525	4	0.73	6.1	0.9449	4.061
10/23	500	20	1092	48	0.39	6.1	1.3195	4.019
11/6	440	71	1110	4	0.8	6.1	1.1423	4.018
11/13	445	22	1300	2	0.75	6.1	0.9865	4.000
11/20	480	15	1050	6	0.70	6.1	1.3174	4.087
11/25	525	23	1140	9	0.69	6.1	1.3272	4.046
N	8	8	8	8	8	8	8	8
$\bar{x}$	510	26	1221	16	0.65	6.1	1.2172	4.048
σ	71.86	18.62	163.58	18.81	0.154	0.035	0.172	0.0459
C.V.%	14.1	71.6	13.4	117.8	23.7	0.58	14.2	1.13

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TABLE A-254. COD DATA FOR 6 DAY PHENANTHRENE UNIT

Chemical Compound: Phenanthrene θ_c = 6 days

Parameter: COD Volume of Reactor = 2.97 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
10/2	670	70	1350	36	0.25	6.1	1.4683	6.219
10/9	520	35	1210	50	0.14	6.3	1.3127	5.889
11/6	440	31	1260	6	0.44	6.2	1.0518	5.936
11/13	445	15	1480	4	0.46	6.2	0.9029	6.1500
11/20	480	11	1210	21	0.34	6.2	1.1913	6.073
11/25	525	24	1310	20	0.36	6.2	1.2035	6.0512
N	6	6	6	6	6	6	6	6
$\bar{x}$	513	31	1303	22.83	0.33	6.2	1.1884	6.0531
σ	84.72	21.75	102.69	17.67	0.120	0.063	0.197	0.125
C.V.%	16.5	68.3	7.9	77.4	36.5	1.02	16.6	2.06

TABLE A-255. BOD_5 DATA FOR 2 DAY TOLUENE, PHENANTHRENE AND ETHYL BENZENE COMBINED UNIT

Chemical Compound: Combined: Toluene, Phenanthrene, Ethyl Benzene

θ_c = 2 days

Parameter: BOD_5

Volume of Reactor = 3.13 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
10/5/81	204	2.90	720	14	6.1	1.420	0.80	2.0
10/7	198	2.14	636	12	6.2	1.500	0.89	1.9
10/9	235	2.32	620	6	6.0	1.500	1.05	2.0
10/12	204	0.72	692	8	6.25	1.500	0.85	2.0
10/14	253	2.08	690	6	6.40	1.500	1.08	2.0
10/16	209	1.35	580	4	6.20	1.500	1.03	2.0
10/19	250	1.00	520	6	6.25	1.500	1.38	2.0
10/21	214	1.70	490	10	6.20	1.500	1.25	1.9
10/23	228	6.20	512	6	6.20	1.500	1.27	2.0
10/26	231	1.84	585	12	6.40	1.500	1.16	1.9
10/28	249	3.50	558	10	6.30	1.450	1.29	2.0
10/30	218	4.08	565	0	6.20	1.500	1.10	2.1
11/2	210	4.63	715	0	6.40	1.500	0.86	2.1
11/4	240	2.23	736	2	6.20	1.500	0.93	2.1
11/6	197	3.90	825	4	6.40	1.500	0.70	2.0
11/9	236	2.5	770	4	6.20	1.500	0.87	2.0
11/11	204	2.7	665	8	6.00	1.500	0.85	2.0
11/13	226	1.5	914	2	6.10	1.500	0.69	2.1
11/16	221	1.5	504	0	6.35	1.500	1.28	2.1
11/18	185	1.25	775	6	6.2	1.500	0.68	2.0
11/20	210	1.32	625	8	6.3	1.500	0.97	2.0
11/23	219	1.71	695	8	6.2	1.500	0.90	2.0
11/25	220	1.10	640	4	6.1	1.500	0.96	2.0
N	23	23	23	23	23	23	23	23
$\bar{x}$	217	2.36	654	6	6.2	1.494	0.98	2.0
σ	25	1.33	109	4	0.1	0.019	0.22	0.06
C.V.%	11.52	56.35	16.67	66.67	16.13	1.27	22.45	3.00

TABLE A-256. BOD_5 DATA FOR 4 DAY TOLUENE, PHENANTHRENE AND ETHYL BENZENE COMBINED UNIT

Chemical Compound: Combined: Toluene, Phenanthrene, Ethyl Benzene

θ_c = 4 days

Parameter: BOD_5

Volume of Reactor: 3.14 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
10/2	222	4.9	630	8	6.1	0.680	0.99	4.0
10/5	204	3.2	800	14	5.8	0.580	0.68	4.3
10/7	198	1.21	708	4	6.4	0.750	0.82	3.9
10/9	235	1.37	800	2	6.2	0.750	0.83	4.1
10/14	253	3.07	975	6	6.3	0.750	0.75	3.9
10/16	209	1.30	1040	2	6.3	0.750	0.58	4.1
10/19	250	2.8	1720	3	6.4	0.750	0.43	4.1
10/21	214	3.7	1735	0	6.4	0.750	0.36	4.2
10/23	228	5.4	1722	0	6.2	0.750	0.38	4.2
10/26	231	1.38	1485	2	6.4	0.750	0.46	4.1
10/28	249	1.50	1508	12	6.1	0.700	0.46	4.1
10/30	218	3.04	2210	0	6.6	0.750	0.30	4.2
11/2	210	4.07	1415	0	6.8	0.750	0.46	4.2
11/4	240	2.62	1476	4	6.2	0.750	0.46	4.1
11/6	197	2.90	1380	0	6.4	0.750	0.42	4.2
11/9	236	1.9	1388	0	6.4	0.750	0.50	4.2
11/11	204	2.8	1295	16	6.2	0.750	0.45	3.7
11/13	226	1.3	1376	0	6.2	0.750	0.48	4.2
11/16	221	1.2	1203	0	6.1	0.750	0.51	4.2
11/18	185	1.04	1095	0	6.4	0.750	0.50	4.2
11/20	210	2.38	1107	4	6.4	0.750	0.56	4.0
11/23	219	2.49	1070	10	6.4	0.750	0.60	3.8
11/25	220	2.00	1046	4	6.2	0.750	0.60	4.0
N	23	23	23	23	23	23	23	23
$\bar{x}$	217	2.50	1273	4	6.3	0.737	0.54	4.1
σ	24.55	1.21	380	4.9	0.20	0.039	0.17	0.15
C.V.%	11.31	48.4	29.85	122.5	3.17	5.29	31.48	3.66

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TABLE A-257. BOD_5 DATA FOR 6 DAY TOLUENE, PHENANTHRENE AND ETHYL BENZENE COMBINED UNIT

Chemical Compound: Combined: Toluene, Phenanthrene, Ethyl Benzene — θ_c = 6 days

Parameter: BOD_5 — Volume of Reactor = 3.04 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
10/2	222	3.3	1365	8	6.3	0.410	0.48	6.60
10/5	204	2.9	1280	14	6.2	0.370	0.47	6.6
10/7	198	0.87	1282	6	6.2	0.500	0.45	5.6
10/9	235	1.86	1114	4	6.4	0.500	0.64	6.0
10/12	204	1.03	1132	8	6.3	0.500	0.54	5.4
10/14	253	5.22	1360	0	6.4	0.500	0.56	6.1
10/16	209	1.33	1264	4	6.3	0.500	0.49	5.8
10/19	250	3.20	1550	4	6.3	0.500	0.48	5.8
10/21	214	2.20	1505	12	6.2	0.500	0.42	5.4
10/23	228	4.00	1312	0	6.2	0.500	0.51	6.1
10/26	231	1.11	1280	6	6.0	0.500	0.51	5.7
10/28	249	1.70	1214	2	6.3	0.500	0.61	5.9
10/30	218	2.62	1410	0	6.4	0.500	0.47	6.1
11/2	210	4.15	1060	0	6.3	0.500	0.59	6.1
11/4	240	4.90	1314	6	6.3	0.470	0.55	6.0
11/6	197	5.80	1075	0	6.4	0.500	0.56	6.1
11/9	236	5.4	1012	0	6.3	0.500	0.70	6.1
11/13	226	2.1	940	0	6.2	0.500	0.71	6.1
11/15	221	1.25	1460	2	6.4	0.500	0.46	5.9
11/18	185	4.63	1015	4	6.4	0.500	0.55	5.7
11/20	210	2.16	1336	0	6.4	0.500	0.48	6.1
11/23	219	1.15	770	4	6.4	0.500	0.86	5.6
11/25	220	1.1	880	2	6.2	0.500	0.73	5.9
N	23	23	23	23	23	23	23	23
$\bar{x}$	217	2.78	1171	3.7	6.3	0.489	0.55	5.9
σ	25	1.60	307	4.0	0.1	0.032	0.16	0.31
C.V.%	11.52	57.55	26.22	108.1	1.59	6.54	0.29	5.25

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TABLE A-258. TOC DATA FOR 2 DAY TOLUENE, PHENANTHRENE AND ETHYL BENZENE COMBINED UNIT

Chemical Compound: Combined: Toluene, Phenanthrene, Ethyl Benzene

θ_c = 2 days

Parameter: TOC

Volume of Reactor = 3.13 liters

Date	S_i mg/l	Se mg/l	X mg/l	Xe mg/l	F/W 1/day	F ml/min	F/M	θ_c days
10/5/81	150	14	720	14	6.1	1.420	0.59	2.0
10/7	154	24	636	12	6.2	1.500	0.69	1.9
10/9	133	16	620	6	6.0	1.500	0.59	2.0
10/12	148	9	692	8	6.2	1.500	0.61	2.0
10/14	130	14	690	6	6.4	1.500	0.55	2.0
10/16	176	7	580	4	6.2	1.500	0.87	2.0
10/19	141	5	520	6	6.2	1.500	0.78	2.0
10/21	94	8	440	10	6.2	1.500	0.55	1.9
10/23	148	17	512	6	6.2	1.500	0.82	2.0
10/26	135	11	585	12	6.4	1.500	0.68	1.9
10/28	123	14	558	10	6.3	1.450	0.64	2.0
10/30	140	14	565	0	6.2	1.500	0.71	2.1
11/2	145	9	715	0	6.4	1.500	0.60	2.1
11/4	113	19	736	2	6.2	1.500	0.44	2.1
11/9	164	16	770	4	6.2	1.500	0.61	2.0
11/11	159	22	665	8	6.0	1.500	0.66	2.0
11/13	132	20	914	2	6.1	1.500	0.41	2.1
11/16	123	16	504	0	6.3	1.500	0.71	2.1
11/18	159	21	775	6	6.2	1.500	0.59	2.0
11/20	157	13	625	8	6.3	1.500	0.73	2.0
11/23	169	10	695	8	6.2	1.500	0.69	2.0
11/25	173	19	640	4	6.1	1.500	0.70	2.0
N	22	22	22	22	22	22	22	22
$\bar{x}$	144	14.7	646	6	6.2	1.494	0.65	2.0
σ	20	5.1	105	4	0.1	0.020	0.11	0.06
C.V.%	13.89	34.69	16.25	66.67	1.61	1.34	16.92	3.0

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TABLE A-259. TOC DATA FOR 4 DAY TOLUENE, PHENANTHRENE AND ETHYL BENZENE COMBINED UNIT

Chemical Compound: Combined: Toluene, Phenanthrene, Ethyl Benzene

θ_c = 4 days

Parameter: TOC

Volume of Reactor = 31.4 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
10/2	164	4	630	8	6.1	0.680	0.73	4.0
10/5	150	17	800	14	5.8	0.580	0.50	4.3
10/7	154	25	708	4	6.4	0.750	0.64	3.9
10/9	133	14	800	2	6.2	0.750	0.47	4.1
10/12	148	13	1028	14	6.2	0.750	0.41	3.6
10/14	130	18	975	6	6.3	0.750	0.38	3.9
10/16	176	10	1040	2	6.3	0.750	0.49	4.1
10/19	141	7	1720	3	6.4	0.750	0.24	4.1
10/23	148	16	1722	0	6.2	0.750	0.24	4.2
10/26	135	12	1485	2	6.4	0.750	0.27	4.1
10/28	123	14	1508	12	6.1	0.700	0.23	4.1
11/2	145	6	1415	0	6.8	0.750	0.32	4.2
11/9	164	12	1388	0	6.4	0.750	0.35	4.2
11/11	159	22	1295	16	6.2	0.750	0.35	3.7
11/13	132	25	1376	0	6.2	0.750	0.27	4.2
11/16	123	21	1203	0	6.1	0.750	0.29	4.2
11/18	159	19	1095	0	6.4	0.750	0.43	4.0
11/20	157	14	1107	4	6.4	0.750	0.42	4.0
11/23	169	11	1070	10	6.4	0.750	0.46	3.8
11/25	173	20	1046	4	6.2	0.750	0.47	4.0
N	20	20	20	20	20	20	20	20
$\bar{x}$	149	16.9	1171	5.1	6.3	0.736	0.40	4.0
σ	16	7.6	314	5.4	0.2	0.041	0.13	0.2
C.V.%	10.74	44.97	26.81	105.88	3.17	5.57	32.50	5.0

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TABLE A-260. TOC DATA FOR 6 DAY TOLUENE, PHENANTHRENE AND ETHYL BENZENE COMBINED UNIT

Chemical Compound: Combined: Toluene
Phenanthrene
Ethyl Benzene

θ_c = 6 days

Parameter: TOC

Volume of Reactor = 3.04 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c
10/2	164	44	1365	8	6.3	0.410	0.36	6.6
10/5	150	18	1280	14	6.2	0.370	0.35	6.6
10/7	154	26	1282	6	6.2	0.500	0.35	5.6
10/9	133	15	1114	4	6.4	0.500	0.36	6.0
10/12	148	19	1132	8	6.3	0.500	0.39	5.4
10/14	130	20	1360	0	6.4	0.500	0.29	6.1
10/16	176	10	1264	4	6.3	0.500	0.42	5.8
10/19	141	13	1550	4	6.3	0.335	0.27	5.8
10/23	148	16	1312	0	6.2	0.500	0.33	6.1
10/26	135	9	1280	6	6.0	0.500	0.30	5.7
10/28	123	18	1214	2	6.3	0.500	0.30	5.9
10/30	140	9	1410	0	6.4	0.500	0.30	6.1
11/2	145	5	1060	0	6.3	0.500	0.41	6.1
11/4	113	24	1314	6	6.3	0.470	0.26	6.0
11/9	164	16	1012	0	6.3	0.500	0.48	6.1
11/13	132	23	940	0	6.2	0.500	0.41	6.1
11/16	123	22	1460	2	6.4	0.500	0.26	5.9
11/18	159	21	1015	4	6.4	0.500	0.48	5.7
11/20	157	14	1336	0	6.4	0.500	0.36	6.1
11/23	169	7	770	4	6.4	0.500	0.67	5.6
11/25	173	19	880	2	6.2	0.500	0.58	5.9
N	21	21	21	21	21	21	21	21
$\bar{x}$	147	17.7	1207	3.5	6.3	0.488	0.38	6.0
σ	17.5	8.3	201	3.6	0.1	0.34	0.11	0.3
C.V.%	11.90	46.89	16.65	102.86	1.59	6.97	28.95	5.0

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TABLE A-261. COD DATA FOR 2 DAY TOLUENE, PHENANTHRENE AND ETHYL BENZENE COMBINED UNIT

Chemical Compound: Combined: Toluene
Phenanthrene
Ethyl Benzene

θ_c = 2 days

Parameter: COD

Volume of Reactor = 3.13 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
10/9 /81	575	35	620	6	6.0	1.500	2.56	2.0
10/16	450	18	580	4	6.2	1.500	2.22	2.0
10/23	450	20	512	6	6.2	1.500	2.44	2.0
10/30	470	40	565	0	6.2	1.500	2.31	2.1
11/6	420	42	825	4	6.4	1.500	1.46	2.0
11/13	470	32	914	2	6.10	1.500	1.44	2.1
11/20	420	20	625	8	6.3	1.500	1.95	2.0
11/25	500	25	640	4	6.1	1.500	2.19	2.0
N	8	8	8	8	8	8	8	8
$\bar{x}$	469	29	660	4.3	6.2	1.500	2.07	2.0
σ	50	9.5	137	2.5	0.1	0	0.42	0.05
C.V.%	10.66	32.76	20.76	58.14	1.61	0	20.29	2.60

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TABLE A-262. COD DATA FOR 4 DAY TOLUENE, PHENANTHRENE AND ETHYL BENZENE COMBINED UNIT

Chemical Compound: Combined: Toluene
Phenanthrene
Ethyl Benzene

Parameter: COD

θ_c = 4 days

Volume of Reactor = 3.14 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
10/2/81	510	64	630	8	6.1	0.680	2.27	4.0
10/9	575	18	800	2	6.2	0.750	2.04	4.1
10/16	450	22	1040	2	6.3	0.750	1.25	4.1
10/23	450	35	1722	0	6.2	0.750	0.74	4.2
10/30	470	32	2210	0	6.6	0.750	0.63	4.2
11/6	420	41	1380	0	6.4	0.750	0.89	4.2
11/13	470	35	1376	0	6.2	0.750	0.97	4.2
11/20	420	27	1107	4	6.4	0.750	1.11	3.8
11/25	500	29	1046	4	6.2	0.750	1.36	4.0
N	9	9	9	9	9	9	9	9
$\bar{x}$	474	31	1257	2.2	6.3	0.742	1.25	4.1
σ	49	8	483	2.7	0.2	.023	0.56	0.14
C.V.%	10.34	25.81	38.42	122.73	3.17	3.10	44.80	3.41

TABLE A-263. COD DATA FOR 6 DAY TOLUENE, PHENANTHRENE AND ETHYL BENZENE COMBINED UNIT

Chemical Compound: Combined: Toluene
Phenanthrene
Ethyl Benzene

θ_c = 6 days

Volume of Reactor = 3.04 liters

Parameter: COD

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	F 1/day	Fw ml/min	F/M	θ_c days
	575	28	1114	4	6.4	0.500	1.56	6.0
10/16 /81	450	30	1264	4	6.3	0.500	1.06	5.8
10/23	450	16	1312	0	6.2	0.500	1.01	6.1
10/30	470	38	1410	0	6.4	0.500	1.01	6.1
11/6	420	49	1075	0	6.4	0.500	1.18	6.1
11/13	470	31	940	0	6.2	0.500	1.47	6.1
11/20	420	18	1336	0	6.4	0.500	.95	6.1
11/25	500	28	880	2	6.2	0.500	1.67	5.9
N	8	8	8	8	8	8	8	8
$\bar{x}$	469	30	1166	1.3	6.3	0.500	1.24	6.0
σ	50	10.5	194	1.8	0.1	0	0.28	0.1
C.V.%	10.66	35.0	16.64	138.46	1.59	0	22.58	16.67

TABLE A-264. BOD_5 DATA FOR 2 DAY CHLOROFORM UNIT

Chemical Compound: Chloroform

θ_c = 2 days

Parameter: BOD_5

Volume of Reactor = 3.14 liters

Date	Si mg/l	Se mg 1	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/4/82	248	3.2	328	4	1.470	6.5	2.25	2.0
1/8	232	3.3	556	42	1.170	5.5	1.05	2.0
1/11	242	3.0	508	18	1.280	6.5	1.42	2.0
1/13	245	3.4	492	0	1.570	6.2	1.41	2.0
1/15	273	3.3	632	4	1.520	6.5	1.28	2.0
1/18	253	5.6	468	0	1.570	6.8	1.68	2.0
1/22	197	2.70	336	0	1.570	6.7	1.80	2.0
1/25	200	11.3	314	24	0.949	6.3	1.84	2.0
1/27	270	15.6	560	36	0.927	6.3	1.39	2.0
1/29	246	7.9	410	8	1.420	6.2	1.70	2.0
2/1	219	11.3	518	4	1.510	6.4	1.24	2.0
2/3	275	11.25	480	13	1.353	6.5	1.71	2.0
2/5	201	15.9	324	0	1.570	6.0	1.71	2.0
2/10	242	10.6	268	4	1.456	6.3	2.61	2.0
2/12	216	15.3	410	60	0.431	6.6	1.59	2.0
2/19	275	12.64	524	64	0.550	6.0	1.44	2.0
N	16	16	16	16	16	16	16	16
$\bar{x}$	239.6	8.5	445.5	20.063	1269.8	6.33	1.633	2.0
σ	26.82	5.0	106.8	22.26	368.5	0.316	0.386	0
C.V.%	0.112	58.8	0.239	1.11	0.290	0.049	0.237	0

TABLE A-265. BOD_5 DATA FOR 4 DAY CHLOROFORM UNIT

Chemical Compound: Chloroform

θ_c = 4 days

Parameter: BOD5

Volume of Reactor = 3.04 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/4/82	248	4.2	836	4	0.725	6.3	0.8853	4.0
1/6	245	5	846	0	0.760	6.0	0.8231	4.0
1/13	245	0.50	776	0	0.760	6.4	0.9571	4.0
1/15	273	1.20	773	4	0.716	6.3	1.054	4.0
1/18	253	3.30	880	0	0.760	6.2	0.8443	4.0
1/22	197	0.50	880	0	0.760	6.3	0.6681	4.0
1/29	246	1.0	1040	0	0.760	6.3	0.706	4.0
2/1	219	0.70	1108	8	0.699	6.3	0.5898	4.0
2/5	201	1.40	1344	0	0.760	6.0	0.425	4.0
2/8	226	1.2	820	32	0.422	6.3	0.8225	4.0
2/10	242	1.33	956	92	0	5.8	0.6955	3.78
2/15	220	1.8	868	78	0	6.0	0.697	3.73
N	12	12	12	12	12	12	12	12
$\bar{x}$	234.6	1.844	927.3	18.17	593.5	6.183	0.764	3.960
σ	22.29	1.494	165.4	32.62	292.89	0.185	0.1695	0.096
C.V.%	0.095	0.810	0.178	1.796	0.494	0.029	5.897	0.024

TABLE A-266. BOD_5 DATA FOR 6 DAY CHLOROFORM UNIT

Chemical Compound: Chloroform

θ_c = 6 days

Parameter: BOD5

Volume of Reactor = 3.16 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/4/82	248	3.6	872	7	0.445	6.5	0.8424	6.0
1/6	245	3.3	1051	0	0.526	6.8	0.7223	6.0
1/18	253	2.89	1084	48	0.104	6.7	0.7123	6.0
1/27	270	1.50	1464	4	0.501	5.8	0.4875	6.0
1/29	246	0.80	1272	0	0.526	6.6	0.5817	6.0
2/1	219	0.84	1401	8	0.475	6.6	0.47	6.0
2/3	275	2.15	1536	0	0.526	6.0	0.4895	6.0
2/5	201	1.70	1644	0	0.526	6.5	0.3621	6.0
2/15	220	1.4	1632	0	0.526	5.4	0.33	6.0
N	9	9	9	9	9	9	9	9
$\bar{x}$	241	2.02	1328.4	7.44	461.67	6.34	0.555	6.0
σ	24.36	1.034	275.4	15.55	137.21	0.489	0.173	0
C.V.%	0.100	0.51	0.207	2.09	0.297	0.077	0.312	0

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TABLE A-267. TOC DATA FOR 2 DAY CHLOROFORM UNIT

Chemical Compound: Chloroform

θ_c = 2 days

Parameter: TOC

Volume of Reactor = 3.14 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
1/4/82	169	12	328	4	1.470	6.5	1.54	2.0
1/6	153.5	16	324	0	1.570	6.4	1.39	2.0
1/8	167	34	556	42	1.170	5.5	0.75	2.0
1/11	166	16.5	508	18	1.280	6.5	0.97	2.0
1/13	169	12	492	0	1.570	6.2	0.97	2.0
1/18	132	15	468	0	1.570	6.8	0.87	2.0
1/20	128.5	13.9	468	12	1.370	6.5	0.82	2.0
1/22	169.5	21	336	0	1.570	6.7	1.55	2.0
1/25	173	30	314	24	0.949	6.3	1.59	2.0
1/27	172	24.5	560	36	0.927	6.3	0.88	2.0
1/29	169.5	27	410	8	1.420	6.2	1.17	2.0
2/1	183	33	518	4	1.510	6.4	1.04	2.0
2/3	144.5	26	480	13	1.353	6.5	1.23	2.0
2/5	178.5	32	324	0	1.570	6.0	2.63	2.0
2/10	158	32	268	4	1.456	6.3	1.70	2.0
2/12	143	25	410	60	0.431	6.6	1.05	2.0
2/17	136	27	363	67	0.195	5.0	0.859	2.0
2/19	138	46	524	64	0.550	6.0	0.724	2.0
N	18	18	18	18	18	18	18	18
$\bar{x}$	158.3	24.61	425.1	19.56	1218	6.26	1.207	2.0
σ	17.104	9.22	94.22	23.85	432.7	0.433	0.471	0
C.V.%	0.108	0.375	0.222	1.219	0.355	0.069	0.39	0

TABLE A-268. TOC DATA FOR 4 DAY CHLOROFORM UNIT

Chemical Compound: Chloroform θ_c = 4 days

Parameter: TOC Volume of Reactor = 3.04 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/4/82	169	13	836	4	0.725	6.3	0.603	4.0
1/6	153.5	16	846	0	0.760	6.0	0.5157	4.0
1/13	169	11	776	0	0.760	6.4	0.6602	4.0
1/18	132	11.5	880	0	0.760	6.2	0.4405	4.0
1/20	128.5	9.4	924	2	0.741	6.3	0.415	4.0
1/22	169.5	18	880	0	0.760	6.3	0.5748	4.0
1/29	169.5	15.5	1040	0	0.760	6.3	0.4864	4.0
2/1	183	21	1108	8	0.699	6.3	0.4929	4.0
2/10	158	17.5	956	92	0	5.8	0.677	3.78
2/15	122	18	868	78	0	6.0	0.399	3.73
N	10	10	10	10	10	10	10	10
$\bar{x}$	155.4	15.09	911.4	18.4	596.5	6.19	0.526	3.951
σ	12.47	3.727	99.72	35.35	315.02	0.191	0.099	0.104
C.V.%	0.0802	0.247	0.109	1.921	0.528	0.031	0.187	0.026

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TABLE A-269. TOC DATA FOR 6 DAY CHLOROFORM UNIT

Chemical Compound: Chloroform

θ_c = 6 days

Parameter: TOC

Volume of Reactor = 3.16 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/4/82	169	18.5	872	7	0.445	6.5	0.5741	6.0
1/6	153.5	18	1051	0	0.526	6.8	0.4526	6.0
1/13	169	13	1240	12	0.461	5.0	0.3105	6.0
1/18	132	10	1084	48	0.104	6.7	0.3718	6.0
1/20	128.5	10.4	1112	2	0.510	6.6	0.3570	6.0
1/22	169.5	15.5	1004	0	0.526	6.6	0.5078	6.0
1/25	173	18	1376	8	0.472	6.8	0.3896	6.0
1/27	172	17	1464	4	0.501	5.8	0.3105	6.0
1/29	169.5	18.5	1272	0	0.526	6.6	0.4008	6.0
2/3	144.5	18	1536	0	0.526	6.0	0.2572	6.0
2/5	178.5	15.5	1644	0	0.526	6.5	0.3216	6.0
2/15	122	13	1632	0	0.526	6.4	0.218	6.0
N	12	12	12	12	12	12	12	12
$\bar{x}$	156.75	15.45	1273.9	6.75	470.8	6.358	0.373	6
σ	19.94	3.129	257.3	13.59	119.1	0.523	0.102	0
C.V.%	0.127	0.203	0.202	2.015	0.253	0.082	0.273	0

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TABLE A-270. COD DATA FOR 2 DAY CHLOROFORM UNIT

Chemical Compound: Chloroform

θ_c = 2 days

Parameter: COD

Volume of Reactor = 3.14 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/15/82	340	30	632	4	1. 520	6.5	1.60	2.0
1/22	380	55	336	0	1. 570	6.7	3.47	2.0
1/27	371	48	410	8	1. 420	6.2	2.57	2.0
2/5	355	61	324	0	1. 570	6.0	3.01	2.0
2/12	400	42	410	60	0. 431	6.6	2.95	2.0
2/19	330	46	524	64	0. 550	6.0	1.73	2.0
N	6	6	6	6	6	6	6	6
$\bar{x}$	362.67	47	439.3	22.67	1176.8	6.33	2.55	2
σ	19.04	10.73	118.3	30.64	535.77	0.31	0.747	0
C.V.%	5.2	22.83	26.69	135.14	45.53	4.86	29.31	0

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TABLE A-271. COD DATA FOR 4 DAY CHLOROFORM UNIT

Chemical Compound: Chloroform θ_c = 4 days

Parameter: COD Volume of Reactor = 3.04 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/15	340	44	773	4	0.716	6.3	1.313	4.0
1/22	380	30	996	0	0.760	6.3	1.049	4.0
1/29	371	31	1040	0	0.760	6.3	0.976	4.0
2/5	355	19	1344	0	0.760	6.0	0.1184	4.0
N	4	4	4	4	4	4	4	4
$\bar{x}$	361.5	31	1038.25	1	749	6.22	0.8641	4
σ	17.67	10.23	234.96	2	22	0.15	0.5177	0
C.V.%	4.88	33.0	22.63	200	2.94	2.41	59.92	0

TABLE A-272. COD DATA FOR 6 DAY CHLOROFORM UNIT

Chemical Compound: Chloroform

θ_c = 6 days

Parameter: COD

Volume of Reactor = 3.16 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/22	380	34	1004	0	0.526	6.6	1.14	6.0
1/29	371	29	1272	0	0.526	6.6	0.87	6.0
2/5	355	55	1644	0	0.526	6.5	0.63	6.0
2/12	400	24	1832	0	0.526	6.0	0.59	6.0
N	4	4	4	4	4	4	4	4
$\bar{x}$	376.5	35.5	1438	0	526	6.42	0.81	6
σ	18.77	13.62	371.29	0	0	0.29	0.25	0
C.V.%	4.98	38.38	25.82		0	4.47	31.33	0

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TABLE A-273. BOD_5 DATA FOR 2 DAY CARBON TETRACHLORIDE UNIT

Chemical Compound: Carbon-Tetrachloride

Parameter: BOD_5

θ_c = 2 days

Volume of Reactor = 3.13 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/4/82	296	5.1	750	2	1.500	6.0	1.089	2.06
1/6	275	4.5	556	10	1.500	6.5	1.481	1.91
1/8	232	9.2	930	0	1.500	6.2	0.796	2.09
1/11	335	10	636	1	1.500	6.35	1.540	2.07
1/13	300	5.5	660	12	1.500	6.30	1.317	1.91
1/15	295	2.2	750	17	1.450	6.15	1.114	1.93
1/20	252	3.4	790	3	1.500	6.0	0.881	2.05
1/22	276	5.8	895	6	1.400	6.2	0.879	2.16
1/25	209	5.0	760	1	1.500	6.25	0.790	2.07
1/27	245	7.3	870	2	1.500	6.25	0.809	2.06
1/29	295	9.5	636	5	1.400	6.20	1.321	2.01
2/3	215	10.8	575	3	1.500	6.2	1.065	2.03
2/8	169	7.0	670	18	1.150	6.25	0.725	2.30
2/12	252	4.8	810	30	1.150	6.0	0.859	2.19
N	14	14	14	14	14	14	14	14
$\bar{x}$	257	6.76	715	11.0	1.43	6.21	1.062	2.100
σ	43.0	5.22	112	10.3	0.12	0.12	0.298	0.218
C.V.%	16.7	77.2	15.7	93.9	8.39	1.9	28.0	10.4

TABLE A-274. BOD_5 DATA FOR 4 DAY CARBON TETRACHLORIDE UNIT

Chemical Compound: Carbon-Tetrachloride

Parameter: BOD_5

θ_c = 4 days

Volume of Reactor = 3.14 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
1/4	296	10.1	1020	0	0.750	6.0	0.799	4.19
1/6	275	8.9	1448	11	0.760	6.15	0.535	3.91
1/8	232	5.0	1035	0	0.750	6.3	0.648	4.19
1/11	335	4.8	2335	0.6	0.750	6.25	0.411	4.17
1/13	300	5.7	2196	2	0.750	6.25	0.391	4.14
1/15	295	4.2	1860	11.4	0.750	6.10	0.443	3.93
1/18	201	2.0	1700	6.8	0.750	6.25	0.339	4.01
1/20	252	2.4	1850	0	0.750	6.2	0.387	4.19
1/22	276	3.3	1600	10	0.750	6.3	0.499	3.92
1/25	209	1.7	2090	0	0.750	6.25	0.286	4.19
1/27	245	3.1	2240	2	0.750	6.20	0.311	4.15
1/29	295	4.5	1270	25	0.500	6.30	0.671	4.70
2/1	315	5.0	1310	5	0.750	6.25	0.689	4.02
2/3	215	5.3	1110	9.8	0.750	6.2	0.550	3.82
2/5	276	0.9	950	15	0.650	6.3	0.840	4.01
2/8	169	16	950	10	0.700	6.2	0.505	3.49
2/10	255	1.0	950	5	0.720	6.2	0.763	4.11
2/12	252	1.2	1020	5	0.720	6.2	0.702	4.13
2/15	238	0.4	980	11	0.700	6.3	0.702	3.95
2/17	210	1.8	920	5.0	0.720	6.3	0.660	4.10
N	20	20	20	20	20	20	20	20
$\bar{x}$	257	4.36	1442	6.73	0.72	6.22	0.557	4.07
σ	43.0	3.75	500	6.35	0.06	0.077	0.170	0.226
C.V.%	16.7	86.0	34.7	94.4	8.15	1.24	30.6	5.56

TABLE A-275. BOD_5 DATA FOR 6 DAY CARBON TETRACHLORIDE UNIT

Chemical Compound: Carbon-Tetrachloride

θ_c = 6 days

Parameter: BOD_5

Volume of Reactor = 3.04 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe ml	Fw l/day	F ml/min	F/M	θ_c days
1/4	296	2.1	960	0	0.500	6.1	0.891	6.08
1/6	275	10.0	1456	10	0.480	6.5	0.581	5.54
1/8	232	4.8	1130	0	0.500	6.2	0.604	6.08
1/11	335	5.2	1620	0.3	0.500	6.2	0.608	6.06
1/13	300	6.1	1832	3	0.500	6.2	0.482	5.92
1/15	295	5.6	1230	2	0.500	6.3	0.716	5.92
1/18	201	5.0	1230	8.4	0.500	6.25	0.484	5.45
1/20	252	3.2	1250	0	0.500	6.2	0.593	6.08
1/22	276	2.0	1800	2	0.450	6.35	0.462	5.96
1/25	209	3.6	1820	0.2	0.500	6.25	0.340	6.00
1/27	245	3.0	1880	2	0.500	6.50	0.401	5.99
1/29	295	2.1	1336	2	0.500	6.30	0.659	5.93
2/1	315	4.1	1510	0	0.500	6.25	0.617	6.08
2/3	215	0.6	1430	1.6	0.500	6.2	0.442	5.97
2/5	276	1.4	1440	0	0.500	6.1	0.554	6.08
2/8	169	2.5	1590	0	0.500	6.25	0.314	6.08
2/10	255	0.25	1500	2	0.500	6.3	0.508	5.94
2/12	252	0.4	1750	2	0.500	6.3	0.430	5.96
2/15	238	.3	1070	5.0	0.500	6.3	0.664	5.63
2/17	210	1.0	1250	4.0	0.500	6.4	0.509	5.76
2/19	256	2.7	1550	3.0	0.500	6.25	0.489	5.89
N	21	21	21	21	21	21	21	21
$\bar{x}$	257	3.14	1459	2.39	0.71	6.27	0.540	5.92
σ	41.9	2.40	266	2.69	0.98	0.104	0.133	0.182
C.V.%	16.3	76.5	18.3	112.7	138.24	1.66	24.6	3.08

TABLE A-276. TOC DATA FOR 2 DAY CARBON TETRACHLORIDE UNIT

Chemical Compound: Carbon-Tetrachloride

θ_c = 2 days

Parameter: TOC

Volume of Reactor = 3.13 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
1/4	156.5	15	750	2	1.500	6.0	0.576	2.06
1/6	160	23.5	556	10	1.500	6.5	0.415	1.91
1/8	168	16	830	0	1.500	6.2	0.578	2.09
1/11	151	13	636	1.0	1.500	6.35	0.698	2.07
1/13	164	12	660	12	1.500	6.30	0.720	1.91
1/15	179	16	750	17	1.450	6.15	0.676	1.93
1/18	130	15	777	7.4	1.500	6.25	0.481	1.99
1/20	139	20	790	3.2	1.500	6.0	0.486	2.05
1/22	174	23.5	895	6.0	1.400	6.2	0.555	2.16
1/25	176	41	760	1.4	1.500	6.25	0.809	2.07
1/27	182	36	870	2	1.500	6.25	0.601	2.06
1/29	208	44	630	5	1.400	6.20	0.327	2.01
2/1	211	41	590	4	1.500	6.25	0.05	2.02
2/3	151	26.5	575	3.2	1.500	6.2	0.750	2.03
2/5	179.5	42	510	20	0.750	6.2	1.00	2.92
2/8	157	6	670	18	1.150	6.25	0.673	2.30
2/10	150	17.5	620	20	1.150	6.2	0.691	2.23
2/12	150	22	810	30	1.150	6.0	0.511	2.19
2/15	120	20	800	22	1.350	6.3	0.435	2.00
2/17	128	17	820	35	1.250	6.2	0.445	1.98
N	20	20	20	20	20	20	20	20
$\bar{x}$	162	23.4	715	11.0	1.38	6.21	0.624	2.100
σ	24.0	11.4	112	10.3	0.20	0.12	0.187	0.218
C.V.%	14.8	48.5	15.7	93.9	14.30	1.9	29.9	10.4

TABLE A-277. TOC DATA FOR 4 DAY CARBON TETRACHLORIDE UNIT

Chemical Compound: Carbon-Tetrachloride θ_c = 4 days

Parameter: TOC Volume of Reactor = 3.14 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/4/82	156.5	15	1020	0	0.750	6.0	0.423	4.19
1/6	160	20.5	1448	11	0.740	6.15	0.311	3.91
1/8	168	18	1035	0	0.750	6.3	0.469	4.19
1/11	151	12	2335	0.6	0.750	6.25	0.185	4.17
1/13	164	11	2196	2	0.750	6.25	0.214	4.14
1/15	179	11.5	1860	11.4	0.750	6.10	0.269	3.93
1/18	130	21	1700	6.8	0.750	6.25	0.219	4.01
1/20	139	16	1850	0	0.750	6.2	0.213	4.19
1/22	174	21.5	1600	10	0.750	6.3	0.314	3.92
1/25	176	27	2090	0	0.750	6.25	0.241	4.19
1/27	182	34	2240	2	0.750	6.20	0.231	4.15
1/29	208	31	1270	25	0.500	6.30	0.473	4.70
2/1	211	25	1310	5	0.750	6.25	0.461	4.02
2/3	151	12.5	1110	9.8	0.750	6.2	0.386	3.82
2/5	179.5	24	950	15	0.650	6.3	0.566	4.01
2/8	157	10	950	10	0.700	6.2	0.469	3.49
2/10	150	14	800	5	0.720	6.2	0.533	4.07
2/12	150	16	1020	5	0.720	6.2	0.418	4.13
2/15	120	20	980	11	0.700	6.3	0.354	3.95
2/17	128	12	920	5	0.720	6.3	0.402	4.10
N	20	20	20	20	20	20	20	20
$\bar{x}$	162	18.2	42	6.73	0.72	6.22	0.357	4.07
σ	24.0	7.74	500	6.35	0.59	0.077	0.116	0.226
C.V.%	14.8	42.5	34.7	94.4	8.11	1.24	32.6	5.56

TABLE A-278. TOC DATA FOR 6 DAY CARBON TETRACHLORIDE UNIT

Chemical Compound: Carbon-Tetrachloride θ_c = 6 days

Parameter: TOC Volume of Reactor = 3.04 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
1/4/82	156.5	25	960	0	0.500	6.1	0.471	6.08
1/6	160	20	1456	10	0.480	6.5	0.338	5.54
1/8	168	14	1130	0	0.500	6.2	0.437	6.08
1/11	151	13	1620	0.3	0.500	6.2	0.274	6.06
1/13	164	16	1832	10	0.500	6.2	0.263	5.57
1/15	179	13	1230	2	0.500	6.3	0.434	5.92
1/18	130	24	1230	8.4	0.500	6.25	0.313	5.45
1/20	139	12.4	1250	0	0.500	6.2	0.326	6.08
1/22	174	20	1800	12	0.450	6.35	0.291	5.98
1/25	176	29	1820	0.2	0.500	6.25	0.287	6.00
1/27	182	23	1880	2	0.500	6.50	0.299	5.99
1/29	208	24.5	1336	2	0.500	6.30	0.465	5.93
2/1	211	24	1510	0	0.500	6.25	0.415	6.08
2/3	151	18	1430	1.6	0.500	6.2	0.228	5.97
2/5	179.5	22	1440	0	0.500	6.1	0.360	6.08
2/8	157	14	1590	0	0.500	6.25	0.293	6.08
2/10	150	15	1500	2	0.500	6.3	0.298	5.94
2/12	150	20	1750	2	0.500	6.3	0.256	5.96
2/15	120	18	1070	5.0	0.500	6.3	0.335	5.63
2/17	128	10	1250	4.0	0.500	6.4	0.310	5.76
2/19	120	12	1550	3.0	0.500	6.25	0.229	5.89
N	21	21	21	21	21	21	21	21
$\bar{x}$	159.7	17.2	1459	2.39	0.50	6.27	0.330	5.92
σ	25.1	6.43	266	2.69	0.01	0.104	0.074	0.182
C.V.%	15.7	37.4	18.3	112.7	2.32	1.66	22.4	3.08

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TABLE A-279. COD DATA FOR 2 DAY CARBON TETRACHLORIDE UNIT

Chemical Compound: Carbon-Tetrachloride θ_c = 2 days

Parameter: COD Volume of Reactor = 3.13 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/8	450	46	830	0	1.500	6.2	1.545	2.09
1/15	400	47	750	17	1.450	6.15	1.511	1.93
1/22	365	42	895	6	1.400	6.2	1.162	2.16
1/29	356	29	636	5	1.400	6.2	1.595	2.01
2/5	350	63	510	20	0.750	6.2	1.955	2.92
2/12	400	21	810	30	1.150	6.0	1.364	2.19
N	6	6	6	6	6	6	6	6
$\bar{x}$	387	41.3	738	13.0	1.28	6.16	1.522	2.22
σ	37.7	14.8	142	11.3	0.28	0.080	0.264	0.358
C.V.%	9.74	35.7	19.2	86.8	2.29	1.3	17.3	16.1

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TABLE A-280. COD DATA FOR 4 DAY CARBON TETRACHLORIDE UNIT

Chemical Compound: Carbon-Tetrachloride θ_c = 4 days

Parameter: COD Volume of Reactor = 3.14 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/8	450	25	1035	0	0.750	6.3	1.257	4.19
1/15	400	44	1860	11.4	0.750	6.1	0.601	3.93
1/22	365	47	1600	10	0.750	6.3	0.659	3.92
1/29	356	44	1270	25	0.500	6.3	0.810	4.7
2/5	350	25	950	15	0.650	6.3	1.065	4.01
2/12	400	16	1020	5	0.720	6.2	1.114	4.13
N	6	6	6	6	6	6	6	6
$\bar{x}$	387	33.5	1289	11.1	0.69	6.25	0.918	4.15
σ	37.7	13.1	367.4	8.60	0.10	0.084	0.266	0.292
C.V.%	9.74	39.0	28.5	77.5	14.47	1.34	29.0	7.03

TABLE A-281. COD DATA FOR 6 DAY CARBON TETRACHLORIDE UNIT

Chemical Compound: Carbon-Tetrachloride θ_c = 6 days

Parameter: COD Volume of Reactor = 3.04 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/8	450	35	1130	0	0.500	6.2	1.171	6.08
1/15	400	42	1230	2	0.500	6.3	0.971	5.92
1/22	365	55	1800	12	0.450	6.35	0.611	5.98
1/29	356	64	1336	2	0.500	6.3	0.795	5.93
2/5	350	26	1400	0	0.500	6.1	0.722	6.08
2/12	400	16	1750	2	0.500	6.3	0.682	5.96
2/19	340	16	1550	3	0.500	6.25	0.649	5.89
N	7	7	7	7	7	7	7	7
$\bar{x}$	380	36.3	1456	3.0	0.49	6.26	0.800	5.98
σ	38.7	18.6	254	4.12	0.02	0.084	0.202	0.076
C.V.%	10.2	51.3	17.5	137.4	3.83	1.34	25.3	1.27

TABLE A-282. BOD$_5$ DATA FOR 2 DAY NAPHTHALENE UNIT

Chemical Compound: Naphthalene

Parameter: BOD$_5$

θ_c = 2 days

Volume of Reactor = 3.129 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/4/82	236	3.75	768	1	1.500	6.2	0.89	2.0
1/6	211	1.75	876	0	1.530	6.3	0.70	2.0
1/8	196	6.5	568	0	1.500	6.2	0.98	2.0
1/11	240	2.9	1052	12	1.460	6.4	0.67	2.0
1/13	240	2.7	752	7	1.480	6.0	0.88	2.0
1/15	190	2.7	749	7	1.440	6.1	0.68	2.0
1/18	246	1.6	684	2	1.530	6.0	0.99	2.0
1/20	228	1.3	844	2	1.440	5.8	0.72	2.0
1/22	281	3.0	772	2	1.450	6.2	1.04	2.0
1/25	225	4.4	664	54	.920	5.8	0.90	2.0
1/27	242	4.9	690	1	1.560	6.4	1.03	2.0
1/29	202	5.1	768	5	1.500	5.5	0.64	2.0
2/1	228	5.5	610	1	1.430	6.0	1.03	2.0
2/3	227	3.0	716	5	1.500	6.0	0.86	2.0
2/5	183	1.4	630	10	1.430	6.7	0.90	2.0
2/10	220	3.9	772	22	1.320	6.6	0.87	2.0
2/15	185	2.3	740	34	1.120	5.8	0.67	2.0
2/17	204	3.15	708	4	1.500	6.0	0.79	2.0
2/19	207	2.2	776	10	1.450	6.5	0.79	2.0
N	21	21	21	21	21	21	21	21
$\bar{x}$	220.3	3.1	740.5	9.0	1.430	6.06	0.836	2.0
σ	24.84	1.49	102.6	13.1	0.148	0.37	0.137	0
C.V.%	11.27	48.13	13.86	145.5	10.38	6.16	16.42	0

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TABLE A-283. BOD$_5$ DATA FOR 4 DAY NAPHTHALENE UNIT

Chemical Compound: Naphthalene θ_c = 4 days

Parameter: BOD$_5$ Volume of Reactor = 3.069 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/4/82	236	5.7	1068	0	0.700	6.2	0.64	4.0
1/6	211	1.6	780	0	0.730	6.0	0.76	4.0
1/8	196	2.7	1064	0	0.750	6.3	0.54	4.0
1/11	240	3.0	1180	12	0.740	6.0	0.57	4.0
1/13	240	4.8	1160	4	0.725	6.1	0.59	4.0
1/27	242	3.1	610	3	0.730	6.5	1.21	3.71
1/29	202	3.7	828	3	0.720	6.1	0.70	4.0
2/1	228	5.3	700	1	0.660	6.4	0.98	4.0
2/3	227	4.8	1064	9	0.700	5.9	0.59	4.0
2/5	183	3.0	1040	18	0.600	6.2	0.51	4.0
2/8	242	3.0	1412	4	0.745	6.0	0.48	4.0
2/10	220	2.8	1288	9	0.360	6.4	0.51	4.0
2/12	191	2.4	1388	3	0.740	6.7	0.43	4.0
2/15	185	6.9	1576	8	0.660	6.0	0.33	4.0
2/17	204	2.1	1244	3	0.745	6.3	0.48	4.0
2/19	207	2.0	1340	13	0.690	6.0	0.43	4.0
N	16	16	16	16	16	16	16	16
$\bar{x}$	216	3.556	1108.9	5.625	0.687	6.194	0.609	3.98
σ	22.2	1.51	272.4	5.33	0.096	0.22	0.22	0.0725
C.V.%	9.82	42.4	407.1	94.75	14.36	3.55	36.29	1.82

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TABLE A-284. BOD_5 DATA FOR 6 DAY NAPHTHALENE UNIT

Chemical Compound: Naphthalene — θ_c = 6 days

Parameter: BOD_5 — Volume of Reactor = 3.255 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/4/82	236	3.2	960	0	0.455	6.2	0.68	6.0
1/6	211	1.3	1128	0	0.470	5.6	0.46	6.0
1/8	196	1.7	984	0	0.550	5.6	0.49	6.0
1/11	240	6.3	1796	2	0.50	6.0	0.35	6.0
1/15	190	6.5	1202	21	0.240	6.2	0.43	6.0
1/18	246	4.5	864	34	0.170	6.4	0.81	5.93
1/20	228	3.9	1048	10	0.410	6.2	0.60	6.0
1/22	281	5.1	1016	2	0.530	6.2	0.76	6.0
1/25	225	5.8	1588	6	0.510	6.6	0.41	6.0
1/27	242	4.4	1520	1	0.530	6.5	0.52	6.0
1/29	202	4.7	1335	11	0.470	6.0	0.40	6.0
2/1	228	5.1	1140	10	0.410	6.6	0.58	6.0
2/3	227	6.4	1460	20	0.400	6.6	0.45	6.0
2/5	183	2.1	1530	14	0.460	6.3	0.33	5.95
2/8	242	3.2	1106	12	0.485	6.0	0.58	6.0
2/10	220	4.2	1292	17	0.440	6.2	0.47	6.0
2/12	191	2.1	1512	11	0.475	6.2	0.35	6.0
2/15	185	6.6	1608	19	0.400	6.2	0.32	6.0
2/17	204	2.4	1268	32	0.300	7.2	0.51	6.0
2/19	207	3.6	1580	40	0.330	6.5	0.38	6.0
N	20	20	20	20	20	20	20	20
$\bar{x}$	218.8	4.155	1297	13.1	0.427	6.26	0.494	5.994
σ	25.73	1.69	264.4	11.84	0.099	0.36	0.139	0.019
C.V.%	11.76	40.57	20.39	90.42	23. 33	5.75	28.15	0.31

TABLE A-285. TOC DATA FOR 2 DAY NAPHTHALENE UNIT

Chemical Compound: Naphthalene θ_c = 2 days

Parameter: TOC Volume of Reactor = 3.129 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/4/82	145	17	768	1	1.500	6.20	0.54	2.0
1/6	149	13	876	0	1.53	6.30	0.76	2.0
1/8	161	20	568	0	1.500	6.20	0.81	2.0
1/11	156	11	1052	12	1.460	6.4	0.44	2.0
1/13	163	14	752	7	1.480	6.0	0.60	2.0
1/15	156	9	749	7	1.440	6.1	0.58	2.0
1/18	156	9	684	2	1.530	6.0	0.63	2.0
1/20	123	14	844	2	1.440	5.8	0.39	2.0
1/22	194	20	772	2	1.450	6.2	0.72	2.0
1/25	183	27	664	54	.920	5.8	0.73	2.0
1/27	177	25	690	1	1.560	6.4	0.76	2.0
1/29	192	18	767	5	1.500	5.5	0.64	2.0
2/1	183	26	610	1	1.430	6.0	0.83	2.0
2/3	161	10	716	5	1.500	6.0	0.62	2.0
2/5	162	21	630	10	1.430	6.7	0.80	2.0
2/8	213	5	656	6	1.47	5.3	0.79	2.0
2/10	170	22	772	22	1.32	6.6	0.67	2.0
2/12	175	20	756	4	1.50	5.4	0.58	2.0
2/15	135	36	740	34	1.120	5.8	0.49	2.0
2/17	135	26	708	4	1.500	6.0	0.53	2.0
2/19	130	24	776	10	1.450	6.5	0.50	2.0
N	21	21	21	21	21	21	21	21
$\bar{x}$	163	18.45	740.5	9.0	1.44	6.05	0.638	2.0
σ	23	7.57	102.6	13.1	0.147	0.37	0.129	0
C.V.%	14.0	41.0	13.8	145.5	10.2	6.1	20.2	0

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TABLE A-286. TOC DATA FOR 4 DAY NAPHTHALENE UNIT

Chemical Compound: Naphthalene — θ_c = 4 days

Parameter: TOC — Volume of Reactor = 3.069 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/4/82	145	14	1068	0	0.700	6.20	0.40	4.0
1/6	149	24	780	0	0.733	6.0	0.54	4.0
1/8	161	18	1064	0	0.750	6.30	0.45	4.0
1/11	156	18	1180	2	0.740	6.0	0.38	4.0
1/13	163	17	1160	4	0.725	6.1	0.40	4.0
1/27	177	22	610	3	0.730	6.5	0.88	3.71
1/29	192	25	828	3	0.720	6.10	0.66	4.0
2/1	183	29	700	1	0.660	6.4	0.78	4.0
2/3	161	6	1064	1	0.700	5.9	0.42	4.0
2/5	162	21	1040	18	0.600	6.2	0.45	4.0
2/8	213	7	1412	4	0.745	6.0	0.43	4.0
2/10	170	32	1288	9	0.360	6.4	0.40	4.0
2/12	175	34	1388	3	0.740	6.7	0.40	4.0
2/15	135	32	1576	8	0.660	6.0	0.24	4.0
2/17	135	17	1244	3	0.740	6.30	0.32	4.0
2/19	130	15	1340	13	0.690	6.0	0.27	4.0
N	16	16	16	16	16	16	16	16
$\bar{x}$	163.1	20.7	1108.5	5.0	0.687	6.19	0.46	4.0
σ	22.24	8.4	271.3	5.1	0.096	0.22	0.17	0
C.V.%	13.6	40.4	24.5	102	14.0	3.6	37.5	0

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TABLE A-287. TOC DATA FOR 6 DAY NAPHTHALENE UNIT

Chemical Compound: Naphthalene

Parameter: TOC

θ_c = 6 days

Volume of Reactor = 3.255 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/4/82	145	11	960	0	0.495	6.20	0.44	6.0
1/6	149	21	1128	0	0.470	5.6	0.35	6.0
1/8	161	22	984	0	0.550	5.6	0.43	6.0
1/11	156	8	1796	2	0.510	6.0	0.25	6.0
1/13	163	13	1352	8	0.490	6.4	0.34	6.0
1/15	156	28	1202	21	0.240	6.2	0.36	6.0
1/18	156	28	864	34	0.170	6.4	0.51	6.0
1/20	123	15	1048	10	0.410	6.2	0.32	6.0
1/22	194	24	1016	2	0.530	6.20	0.53	6.0
1/25	183	27	1588	6	0.510	6.6	0.34	6.0
1/27	177	35	1520	1	0.530	6.5	0.33	6.0
1/29	192	25	1335	11	0.470	6.0	0.38	6.0
2/1	183	27	1140	10	0.410	6.60	0.47	6.0
2/3	161	6	1460	20	0.400	6.60	0.32	6.0
2/5	162	21	1530	14	0.460	6.30	0.30	6.0
2/8	213	3	1106	12	0.485	6.0	0.51	6.0
2/10	170	24	1292	17	0.440	6.2	0.36	6.0
2/12	175	25	1512	11	0.475	6.2	0.32	6.0
2/15	135	40	1608	19	0.400	6.2	0.23	6.0
2/17	135	15	1268	32	0.300	7.2	0.34	6.0
2/19	130	14	1580	40	0.330	6.5	0.24	6.0
N	21	21	21	21	21	21	21	21
$\bar{x}$	163	20.69	1299.5	12.85	0.432	6.27	0.365	6.0
σ	23	9.39	258	11.6	0.099	0.35	0.087	0
C.V.%	14.0	45.4	19.8	90.2	23.0	5.6	23.8	0

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TABLE A-288. COD DATA FOR 2 DAY NAPHTHALENE UNIT

Chemical Compound: Naphthalene θ_c = 2 days

Parameter: COD Volume of Reactor = 3.129 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/8/82	420	51.5	568	0	1.500	6.2	2.1	2.0
1/15	330	39	749	7	1.440	6.1	1.24	2.0
1/22	420	47	772	2	1.450	6.2	1.55	2.0
1/29	400	51	768	5	1.500	5.5	1.32	2.0
2/5	370	26	630	10	1.430	6.7	1.81	2.0
2/12	400	16	756	4	1.500	5.4	1.31	2.0
2/19	360	16	776	10	1.450	6.5	1.39	2.0
N	7	7	7	7	7	7	7	7
$\bar{x}$	385.7	35.2	717	5.43	1.467	6.08	1.53	2.0
σ	33.6	15.76	83.1	3.82	3.15	0.48	0.316	0
C.V.%	8.71	44.78	11.59	70.41	2.14	7.91	20.66	0

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TABLE A- 289. COD DATA FOR 4 DAY NAPHTHALENE UNIT

Chemcial Compound: Naphthalene

θ_c = 4 days

Parameter: COD

Volume of Reactor = 3.069 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
1/8/82	420	35	1064	0	0.750	6.3	1.17	4.0
1/29	400	33	828	3	0.720	6.10	1.38	4.0
2/5	370	35	1040	18	0.600	6.2	1.03	4.0
2/12	400	21	1388	3	0.740	6.7	0.91	4.0
2/19	360	15	1340	13	0.670	6.0	0.76	4.0
N	5	5	5	5	5	5	5	5
$\bar{x}$	390	27.8	1132	7.4	0.696	6.26	1.05	4.0
σ	24.49	9.23	231.5	7.7	0.062	0.27	0.24	0
C.V.%	6.28	33.20	20.45	104.1	8.89	4.32	22.86	0

TABLE A-290. COD DATA FOR 6 DAY NAPHTHALENE UNIT

Chemical Compound: Naphthalene — θ_c = 6 days

Parameter: COD — Volume of Reactor = 3.255 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/8/82	420	51.5	984	0	0.550	5.6	1.06	6.0
1/15	330	47	1202	21	0.240	6.2	0.75	6.0
1/22	420	60	1016	2	0.530	6.2	1.13	6.0
1/29	400	38	1335	11	0.470	6.0	0.79	6.0
2/5	370	25	1530	14	0.460	6.3	0.67	6.0
2/12	400	21	1512	11	0.475	6.2	0.73	6.0
2/19	360	25	1580	40	0.330	6.5	0.65	6.0
N	7	7	7	7	7	7	7	7
$\bar{x}$	385.7	38.2	1308.4	14.1	0.436	6.14	0.83	6.0
σ	33.59	15.1	247.3	13.4	0.112	0.28	0.19	0
C.V.%	8.71	39.61	18.90	95.27	25.59	4.59	23.0	0

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TABLE A-291. BOD$_5$ DATA FOR 2 DAY CHLOROFORM NAPHTHALENE AND CARBON TETRACHLORIDE COMBINED UNIT

Chemical Compound: Combined; Chloroform, Naphthalene, Carbon Tetrachloride

Parameter: BOD$_5$

θ_c = 2 days

Volume of Reactor = 3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/4/82	343	2.0	1180	2	1.51	6.1	0.84	2.12
1/6	300	2.0	1150	4	1.5	6.2	0.76	1.99
1/8	282	2.4	1130	2	1.51	6.1	0.72	2.00
1/11	310	1.3	1090	4	1.49	6.1	0.82	2.04
1/13	269	2.9	1150	2	1.50	6.2	0.68	2.10
1/15	277	1.5	1150	4	1.6	6.1	0.69	2.05
1/18	283	2.1	990	8	1.43	6.2	0.84	2.01
1/20	273	2.8	1020	14	1.42	6.2	0.78	2.00
1/22	303	4.6	1050	6	1.48	6.1	0.83	2.00
1/25	309	2.8	1130	10	1.46	6.1	0.79	2.00
1/27	305	4.7	1010	14	1.42	6.2	0.87	2.00
1/29	317	4.5	950	28	1.30	6.2	0.98	2.00
2/1	289	5.9	900	24	1.32	6.1	0.93	2.01
2/3	326	3.6	840	36	1.20	6.2	1.13	2.00
2/5	395	8.6	860	32	1.23	6.2	1.34	2.01
2/8	340	4.6	750	30	1.22	6.1	1.31	2.01
2/10	371	8.5	710	26	1.24	6.1	1.51	2.01
2/12	327	7.7	680	22	1.28	6.1	1.39	2.00
2/15	348	6.7	660	36	1.12	6.0	1.49	2.00
2/17	353	6.8	700	30	1.19	6.2	1.47	2.00
2/19	335	6.6	730	28	1.23	6.2	1.34	2.00
N	21	21	21	21	21	21	21	21
$\bar{x}$	317	4.4	944	17.2	1.36	6.14	1.02	2.02
σ	33.7	2.35	182.3	12.5	0.139	0.059	0.29	0.034
C.V.%	10.6	53.3	19.3	72.8	10.2	0.97	29.1	1.69

TABLE A-292. BOD$_5$ DATA FOR 4 DAY CHLOROFORM, NAPHTHALENE AND CARBON TETRACHLORIDE COMBINED UNIT

Chemical Compound: Combined: Chloroform, Naphthalene, Carbon Tetrachloride

Parameter: BOD$_5$

θ_c = 4 days

Volume of Reactor = 3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
1/4/82	343	4.0	1250	6	0.71	6.2	0.80	4.07
1/6	300	1.6	1230	8	0.69	6.2	0.71	4.10
1/8	282	2.8	1210	4	0.724	6.2	0.71	4.06
1/11	310	1.5	1210	6	0.72	6.2	0.75	4.06
1/13	269	2.9	1260	4	0.73	6.1	0.62	4.01
1/15	277	1.9	1210	2	0.75	6.2	0.67	4.03
1/18	283	2.5	1520	8	0.71	6.3	0.55	4.05
1/20	273	5.7	1220	18	0.64	6.2	0.65	4.00
1/22	303	3.8	1260	6	0.7	6.2	0.70	4.13
1/25	309	4.1	1350	12	0.68	6.3	0.68	4.04
1/27	305	4.6	1370	4	0.73	6.3	0.66	4.05
1/29	317	4.4	1330	12	0.68	6.2	0.70	4.03
2/1	289	3.6	1332	18	0.594	6.3	0.65	4.30
2/3	326	4.3	1320	14	0.665	6.3	0.74	4.05
2/5	395	5.8	1310	14	0.665	6.2	0.88	4.05
2/8	340	3.7	1310	10	0.65	6.2	0.76	4.27
2/10	371	9.4	1310	8	0.69	6.3	0.84	4.12
2/12	327	7.2	1340	7	0.67	6.2	0.71	4.20
2/15	348	5.1	1060	18	0.62	6.1	0.95	4.02
2/17	353	5.3	1000	18	0.61	6.3	1.05	4.00
2/19	335	5.2	1010	20	0.59	6.2	0.97	4.04
N	21	21	21	21	21	21	21	21
$\bar{x}$	317	4.26	1258	10.3	0.677	6.22	0.75	4.08
σ	33.7	1.87	121.55	5.63	0.046	0.060	0.13	0.083
C.V.%	10.6	44.0	9.7	54.7	6.83	0.97	1.97	16.7

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TABLE A-293. BOD$_5$ DATA FOR 4 DAY CHLOROFORM, NAPHTHALENE AND CARBON TETRACHLORIDE COMBINED UNIT

Chemical Compound: Combined: Chloroform, Naphthalene, Carbon Tetrachloride

Parameter: BOD$_5$

θ_c = 6 days

Volume of Reactor = 2.97 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F l/day	F/M ml/min	θ_c days
1/4	343	3.4	1310	4	0.458	6.2	0.79	6.03
1/6	300	3.5	1250	4	0.47	6.2	0.72	6.22
1/8	282	4.5	1240	6	0.443	6.2	0.68	6.13
1/11	310	2.6	1200	8	0.43	6.2	0.78	6.00
1/13	269	4.4	1280	10	0.42	6.2	0.63	6.03
1/15	277	5.3	1300	6	0.45	6.2	0.64	6.11
1/18	283	2.3	1640	22	0.38	6.2	0.52	6.00
1/20	273	3.8	1340	26	0.32	6.3	0.62	6.06
1/22	303	5.3	1250	18	0.37	6.1	0.72	6.05
1/25	309	4.7	1500	13	0.42	6.2	0.62	6.02
1/27	305	4.5	1510	8	0.45	6.0	0.59	6.02
1/29	317	5.9	1470	9	0.44	6.3	0.66	6.03
2/1	289	1.3	1480	12	0.41	6.2	0.59	6.20
2/3	326	1.8	1390	8	0.44	6 0	0.68	6.07
2/5	395	2.9	1400	6	0.45	6.1	0.83	6.10
2/8	340	2.4	1430	2	0.48	6.2	0.71	6.03
2/10	371	4.4	1450	6	0.44	6.2	0.77	6.25
2/12	327	2.4	1410	2	0.47	6.2	0.70	6.10
2/15	348	2.9	1290	6	0.45	6.3	0.82	6.06
2/17	343	2.4	1290	4	0.46	6.2	0.82	6.11
2/19	335	2.8	1300	8	0.44	6.3	0.79	6.02
N	21	21	21	21	21	21	21	21
$\bar{x}$	317	3.5	1368	8.9	0.43	6.19	0.70	6.08
σ	33.7	1.27	112.73	6.27	0.038	0.083	0.088	0.072
C.V.%	10.6	36.3	8.2	70.5	8.7	1.34	12.6	1.18

TABLE A- 294. TOC DATA FOR DAY CHLOROFORM, NAPHTHALENE AND CARBON TETRACHLORIDE COMBINED UNIT

Chemical Compound: Combined; Chloroform, Naphthalene, Carbon Tetrachloride

Parameter: TOC

θ_c = 2 days

Volume of Reactor = 3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/4	164	11	1180	2	1.51	6.1	0.40	2.12
1/6	148	17	1150	4	1.50	6.2	0.38	1.99
1/8	163	14	1130	2	1.51	6.1	0.42	2.00
1/11	171	11	1090	4	1.49	6.1	0.45	2.04
1/13	159	11	1150	2	1.50	6.2	0.41	2.10
1/15	214	12	1150	4	1.60	6.1	0.54	2.05
1/18	156	24	990	8	1.43	6.2	0.46	2.01
1/20	174	18	1020	14	1.42	6.2	0.50	2.00
1/22	199	21	1050	6	1.48	6.1	0.55	2.00
1/25	172	30	1130	10	1.460	6.1	0.44	2.00
1/27	197	28	1010	14	1.420	6.2	0.57	2.00
1/29	208	30	950	28	1.300	6.2	0.64	2.00
2/1	188	33	900	24	1.320	6.1	0.60	2.01
2/3	191	26	840	36	1.200	6.2	0.67	2.00
2/5	182	26	860	32	1.230	6.2	0.62	2.01
2/8	198	23	750	30	1.220	6.1	0.76	2.01
2/10	175	25	710	26	1.24	6.1	0.71	2.01
2/12	180	24	680	22	1.28	6.1	0.76	2.00
2/15	114	22	660	36	1.12	6.0	0.49	2.00
2/17	112	22	700	30	1.19	6.2	0.47	2.00
2/19	110	25	730	28	1.23	6.2	0.44	2.00
N	21	21	21	21	21	21	21	21
$\bar{x}$	170.29	21.57	944.29	17.2	1.36	6.14	0.54	0.496
σ	29.82	6.74	182.33	12.5	0.139	0.059	0.12	0.034
C.V.%	17.5	31.3	19.31	72.8	10.2	0.97	22.16	1.69

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TABLE A-295. TOC DATA FOR 4 DAY CHLOROFORM, NAPHTHALENE AND CARBON TETRACHLORIDE COMBINED UNIT

Chemical Compound: Combined: Chloroform, Naphthalene, Carbon Tetrachloride

Parameter: TOC

θ_c = 4 days

Volume of Reactor = 3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
1/4	164	11	1250	6	0.710	6.2	0.38	4.07
1/6	148	16	1230	8	0.690	6.2	0.35	4.10
1/8	163	22	1210	4	0.724	6.2	0.39	4.06
1/11	171	15	1210	6	0.720	6.2	0.41	4.06
1/13	159	13	1260	4	0.730	6.1	0.36	4.01
1/15	214	18	1210	2	0.750	6.2	0.52	4.03
1/18	156	20	1520	8	0.710	6.3	0.31	4.05
1/20	174	23	1220	18	0.640	6.2	0.42	4.00
1/22	199	21	1260	6	0.700	6.2	0.46	4.13
1/25	172	26	1350	12	0.680	6.3	0.38	4.04
1/27	197	20	1370	4	0.730	6.3	0.43	4.05
1/29	208	12	1330	12	0.680	6.2	0.46	4.03
2/1	188	24	1332	18	0.594	6.3	0.42	4.30
2/3	191	21	1320	14	0.665	6.3	0.43	4.05
2/5	182	21	1310	14	0.660	6.2	0.41	4.05
2/8	198	22	1310	10	0.650	6.2	0.44	4.27
2/10	176	23	1310	8	0.690	6.3	0.40	4.12
2/12	180	20	1340	7	0.670	6.2	0.39	4.20
2/15	114	20	1060	18	0.62	6.1	0.31	4.02
2/17	112	21	1000	18	0.61	6.3	0.32	4.00
2/19	110	24	1010	20	0.59	6.2	0.32	4.04
N	21	21	21	21	21	21	21	21
$\bar{x}$	170.3	19.67	12.58	10.3	0.677	6.22	0.396	4.08
σ	29.82	4.09	121.55	5.63	0.046	0.06	0.054	0.083
C.V.%	17.5	20.8	9.7	54.7	6.83	0.97	13.81	2.03

TABLE A-296. TOC DATA FOR 6 DAY CHLOROFORM, NAPHTHALENE AND CARBON TETRACHLORIDE COMBINED UNIT

Chemical Compound: Combined: Chloroform, Naphthalene, Carbon Tetrachloride

Parameter: TOC

θ_c = 6 days

Volume of Reactor = 2.97 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw l/day	F ml/min	F/M	θ_c days
1/4/82	164	13	1310	4	0.458	6.2	0.38	6.03
1/6	148	12	1250	4	0.470	6.2	0.36	6.22
1/8	163	18	1240	6	0.443	6.2	0.39	6.13
1/11	171	16	1200	8	0.430	6.2	0.43	6.00
1/13	159	12	1280	10	0.420	6.2	0.37	6.03
1/15	214	17	1300	6	0.450	6.2	0.49	6.11
1/20	174	23	1340	26	0.320	6.3	0.40	6.06
1/22	199	20	1250	18	0.370	6.1	0.47	6.05
1/25	172	27	1500	13	0.420	6.2	0.34	6.02
1/27	197	12	1510	8	0.450	6.0	0.38	6.02
1/29	208	18	1470	9	0.440	6.3	0.43	6.03
2/1	188	23	1480	12	0.410	6.2	0.38	6.20
2/3	191	16	1390	8	0.440	6.0	0.40	6.07
2/5	182	21	1400	6	0.450	6.1	0.38	6.10
2/8	198	16	1430	2	0.480	6.2	0.42	6.03
2/10	176	20	1450	6	0.440	6.2	0.36	6.25
2/12	180	18	1410	2	0.470	6.2	0.38	6.10
2/15	114	12	1290	6	0.45	6.3	0.27	6.06
2/17	112	19	1290	4	0.46	6.2	0.26	6.11
2/19	110	20	1300	8	0.44	6.3	0.26	6.02
N	21	20	21	21	21	21	21	21
$\bar{x}$	170.3	18.1	13.68	8.9	0.43	0.395	0.373	6.08
σ	29.82	4.56	112.73	6.27	0.038	0	0.063	0.072
C.V.%	17.5	25.2	8.2	70.5	8.7	0	16.8	1.18

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TABLE A-297. COD DATA FOR 2 DAY CHLOROFORM, NAPHTHALENE AND CARBON TETRACHLORIDE COMBINED UNIT

Chemical Compound: Combined: Chloroform, Naphthalene, Carbon Tetrachloride

θ_c = 2 days

Volume of Reactor = 3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
1/8/82	425	43	1130	2	1.51	6.1	1.08	2.00
1/15	400	39	1150	4	1.6	6.1	1.00	2.05
1/22	400	40	1050	6	1.48	6.1	1.10	2.00
1/29	445	42	950	28	1.30	6.2	1.37	2.00
2/5	380	43	860	32	1.23	6.2	1.29	2.01
2/12	400	29	680	22	1.28	6.1	1.70	2.00
2/19	410	25	730	28	1.23	6.2	1.64	2.00
N	7	7	7	7	7	7	7	7
$\bar{x}$	408.57	37.29	935.71	17.43	1.38	6.14	1.31	2.01
σ	20.96	7.27	187.25	12.95	0.15	0.05	0.28	0.019
C.V.%	5.13	19.51	20.01	74.28	10.97	0.87	21.07	0.93

TABLE A-298. COD DATA FOR 4 DAY CHLOROFORM, NAPHTHALENE AND CARBON TETRACHLORIDE COMBINED UNIT

Chemical Compound: Combined: Chloroform, Naphthalene, Carbon Tetrachloride

θ_c = 4 days

Volume of Reactor = 3.05 liters

Date	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
1/8/82	425	39	1210	4	0.724	6.2	1.03	4.06
1/15	400	23	1210	2	0.75	6.2	0.97	4.03
1/22	400	33	1260	6	0.7	6.2	0.93	4.13
1/29	445	33	1330	12	0.68	6.2	0.98	4.03
2/5	380	35	1310	14	0.665	6.2	0.85	4.05
2/12	400	21	1340	7	0.67	6.2	0.87	4.20
2/19	410	34	1010	20	0.59	6.2	1.19	4.04
N	7	7	7	7	7	7	7	7
$\bar{x}$	408.57	31.14	1238.6	9.29	0.68	6.2	0.97	4.08
σ	20.96	6.59	114.08	6.34	0.05	0	0.114	0.064
C.V.%	5.13	21.17	9.21	68.31	7.47	0	11.7	1.58

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TABLE A-299. COD DATA FOR 6 DAY CHLOROFORM, NAPHTHALENE AND CARBON TETRACHLORIDE COMBINED UNIT

Chemical Compound: Combined: Chloroform, Naphthalene, Carbon Tetrachloride

Parameter: COD

θ_c = 6 days

Volume of Reactor = 2.97 liters

Date:	Si mg/l	Se mg/l	X mg/l	Xe mg/l	Fw 1/day	F ml/min	F/M	θ_c days
1/15/82	400	78	1300	6	0.450	6.2	0.92	6.11
1/22	400	53	1250	18	0.370	6.1	0.95	6.05
1/29	445	29	1470	9	0.440	6.3	0.93	6.03
2/5	380	25	1400	6	0.450	6.1	0.80	6.10
2/12	400	24	1410	2	0.470	6.2	0.85	6.10
2/19	410	16	1300	8	0.44	6.3	0.96	6.02
N	6	6	6	6	6	6	6	6
$\bar{x}$	406	37.5	1355	8.2	0.44	6.2	0.90	6.07
σ	21.54	23.47	84.08	5.38	0.037	0.089	0.063	0.039
C.V.%	5.31	62.6	6.2	65.6	8.4	1.44	7.0	0.65

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